

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

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<b>In re Application of:</b>	<b>Philyaw et al.</b>	
<b>Application Serial No.:</b>	<b>09/494,924</b>	<b>Confirmation No.: 4127</b>
<b>Filing Date:</b>	<b>February 1, 2000</b>	
<b>Group:</b>	<b>2167</b>	
<b>Examiner:</b>	<b>J. Fischetti</b>	
<b>Title:</b>	<b>INPUT DEVICE FOR ALLOWING INTERFACE TO A WEB SITE IN ASSOCIATION WITH A UNIQUE INPUT CODE</b>	

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**BRIEF ON APPEAL**

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### Appendices:

- A. U.S. Patent No. 5,978,773 to Hudetz et al. (“Hudetz”).
- B. U.S. Patent No. 6,577,861 to Ogasawara (“Ogasawara”).
- C. U.S. Patent No. 6,078,321 to Simonoff et al (“Simonoff”).

- D. U.S. Patent No. 6,220,509 to Byford (“Byford”).
- E. Non-Entered Amendment After Final dated November 20, 2006

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**APPELLANTS' MAIN BRIEF ON APPEAL**

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This Brief is submitted in accordance with 37 C.F.R. § 41.67 concerning the Notice of Appeal filed November 20, 2006 in response to the Final Office Action dated May 18, 2006, wherein the Examiner finally rejected claims 22-27 that comprise all of the pending claims in this application.

**I. Real Party Interest.**

The party in interest is L.V. Partners, L.P., a Texas limited partnership, whose general partner is LV GP, L.L.C., and whose principal office and place of business is at 2626 Cole Avenue, Dallas, Texas 75204.

**II. Related Appeals and Interferences.**

Appellants have the following related application pending appeals:

- U.S. Patent Application Serial No. 07/614,937, Appeal No. 2007-1745 entitled "LAUNCHING A WEB SITE USING A PASSIVE TRANSPONDER" (Atty. Dkt. No. PHLY-25,356), filed on July 11, 2000;

- U.S. Patent Application Serial No. 10/884,377 entitled “OPTICAL READER WITH ULTRAVIOLET WAVELENGTH” (Atty. Dkt. No. PHL-26,826) filed on July 2, 2004; and
- U.S. Patent Application Serial No. 09/382,421 entitled “COMBINED PRODUCT CODE AND INSIGNIA FOR SIGNIFYING AN INTERNAL INTERACTIVE CODE” (Atty. Dkt. PHL-24,740) filed on August 24, 1999.

Appellants have filed Notices of Appeal in the following related applications:

- U.S. Patent Application Serial No. 09/382,374 entitled “METHOD AND APPARATUS FOR ALLOWING A BROADCAST TO REMOTELY CONTROL A COMPUTER” (Atty. Dkt. No. PHL-24,736), filed on August 24, 1999;
- U.S. Patent Application Serial No. 09/382,423, entitled “METHOD AND APPARATUS FOR UTILIZING AN AUDIBLE SIGNAL TO INDUCE A USER TO SELECT AN E-COMMERCE FUNCTION” (Atty. Dkt. No. PHL-24,739), filed on August 24, 1999;
- U.S. Patent Application Serial No. 09/417,863, entitled “SOFTWARE DOWNLOADING USING A TELEVISION BROADCAST CHANNEL” (Atty. Dkt. No. PHL-24,767), filed on October 23, 1999;
- U.S. Patent Application Serial No. 09/659,170, entitled “ACCESSING A VENDOR WEB SITE USING PERSONAL ACCOUNT INFORMATION RETRIEVED FROM A CREDIT CARD COMPANY WEB SITE” (Atty. Dkt. No. PHL-25,340), filed on September 11, 2000;
- U.S. Patent Application Serial No. 09/602,034 entitled “CONTROLLING A PC USING A TONE FROM A CELLULAR TELEPHONE” (Atty. Dkt. No. PHL-25,337), filed on June 23, 2000;

- U.S. Patent Application Serial No. 09/659,520, entitled “LAUNCHING A WEB SITE USING A PERSONAL DEVICE” (Atty. Dkt. No. PHL Y-25,355), filed on September 12, 2000.

The above-identified patent application has no related interferences.

### **III. Status of the Claims.**

Claims 22-27 from the application are pending, stand firmly rejected, and are on appeal here. A complete and current listing of Claims 22-27 are attached here in the **CLAIMS APPENDIX**.

### **IV. Status of Amendments.**

Appellants filed an Amendment After Final on November 20, 2006 in response to the Final Office Action, mailed May 18, 2006 which was not entered, but which is attached hereto as Exhibit E; however, no amendments to the claims were presented. Appellants filed a Pre-Appeal Brief Request for Review on November 20, 2006, with its Reason in Support of Pre-Appeal Brief Request for Review which maintained the rejection of Claims 22-27. An amendment filed July 26, 2005 was the last Response entered, which did not reflect any amendments to the claims. The last Response amending claims was filed on December 7, 2004.

### **V. Summary of the Claimed Subject Matter.**

The present invention, as set forth currently in independent Claim 22, relates to a method for interconnecting a first location on a global communication network with a second location thereon. The method comprises the steps of providing an input device<sup>1</sup> coupled to the first location on the global communication network,<sup>2</sup> the input device having associated therewith a unique input device ID<sup>3</sup> that is permanently associated with the input device and independent of the first location;<sup>4</sup> scanning a product code disposed on a product with the input device,<sup>5</sup> which

<sup>1</sup> See specification at reference number 100 on Fig. 1; page 9, lines 3-5; and reference number 1600 on Fig 16; page 29, line 26 – page 30; line 16.

<sup>2</sup> See specification at Figs 1-3; page 9, lines 9-13; page 10, line 25 – page 11, line 2; page 13, lines 1-11.

<sup>3</sup> See specification at page 29, lines 6-9; page 29, line 26 – page 30, line 16; page 31, lines 19-21; reference number 1804 on Fig. 18; page 38, lines 17-22.

<sup>4</sup> See specification at page 33, lines 15-18; page 36, lines 1-4.

product code is representative of the product in commercial transactions,<sup>6</sup> the step of scanning operable to extract the information contained in the product code to provide a unique value as an output;<sup>7</sup> associating the unique value with the unique input device ID in a message packet,<sup>8</sup> such that the unique input device ID is associated with the message packet for transmission over the network<sup>9</sup> and wherein the second location has a predetermined association with the combination of the unique value and the unique input device ID,<sup>10</sup> such predetermined association associates the second location with both the unique device ID and the unique value,<sup>11</sup> and in response to the step of scanning and the step of associating, connecting the first location to the second location.<sup>12</sup>

The present invention, as set forth currently in dependent Claim 23, relates to method Claim 22, wherein the step of connecting to the second location comprises: in response to the step of scanning and the step of associating, accessing a database having stored therein a plurality of unique values for a plurality of products,<sup>13</sup> each associated with routing information over the global communication network to one of the plurality of second locations,<sup>14</sup> comparing the output unique value with the stored unique values in the database,<sup>15</sup> and if a match exists between the output unique value and any of the stored unique values:<sup>16</sup> retrieving from the database the associated routing information to the second location,<sup>17</sup> and connecting the first location to the second location on the global communication network in accordance with the retrieved routing information.<sup>18</sup>

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<sup>5</sup> See specification at page 29, line 21 – page 30, line 5; page 33, lines 11-14; page 35, line 25 – page 36, line 14.

<sup>6</sup> See specification at page 29, lines 10-20; page 30, line 20 – page 31, line 2; page 31, lines 3-8; page 33, lines 11-14.

<sup>7</sup> See specification at page 31, lines 9-18; page 33, lines 11-14.

<sup>8</sup> See specification at page 31, lines 9-26; page 35, line 24 – page 36, line 6.

<sup>9</sup> See specification at page 32, lines 1-13; page 35, line 24 – page 36, line 6; and page 36, lines 7-23.

<sup>10</sup> See specification at page 15, lines 11-21; page 36, lines 7-23.

<sup>11</sup> See specification at page 36, lines 7-23; page 40, line 22 – page 41, line 15.

<sup>12</sup> See specification at page 10, line 25 – page 11, line 15; page 36, line 7 – page 37, line 14.

<sup>13</sup> See specification at page 13, lines 8-16; page 14, lines 23-24.

<sup>14</sup> See specification at Fig. 3; page 14, lines 23-24; page 32, lines 9-13.

<sup>15</sup> See specification at page 15, lines 11-21; page 40, line 22 – page 41, line 5.

<sup>16</sup> See specification at Fig. 23; page 40, line 22 – page 41, line 5.

<sup>17</sup> See specification at page 40, line 22 – page 41, line 5.

<sup>18</sup> See specification at page 32, lines 12-13; page 33, lines 11-22.



The present invention, as set forth currently in dependent Claim 24, relates to the method Claim 22 wherein the unique value comprises a binary value.<sup>19</sup>

The present invention, as set forth currently in dependent Claim 25, relates to the method Claim 22, wherein the product code comprises a universal product code (UPC) as associated with a product indicating information regarding the product for use in commercial transactions associated with that product.<sup>20</sup>

The present invention, as set forth currently in dependent Claim 26, relates to the method Claim 23, wherein the step of accessing the database comprises the steps of: accessing a remote location on the global communication network at an intermediate node thereon;<sup>21</sup> forwarding the unique value and unique device ID to the intermediate node;<sup>22</sup> wherein the database is disposed at the intermediate node;<sup>23</sup> and retrieving the associated routing information from the database in the event of a positive match and forwarding the retrieved routing information back to the first location and connecting the first location to the second location in accordance with the retrieved information.<sup>24</sup>

The present invention, as set forth currently in dependent Claim 27, relates to the method Claim 23, wherein the second location represents product information associated with the product.<sup>25</sup>

## **VI. Grounds of Rejection to be Reviewed on Appeal.**

Claims 22-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,978,773 to Hudetz et al (“Hudetz”) in view of U.S. Patent No. 6,577,861 to Ogasawara (“Ogasawara”) and further in view of U.S. Patent No. 6,078,321 to Simonoff et al (“Simonoff”).

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<sup>19</sup> See specification at page 31, lines 9-26.

<sup>20</sup> See specification at page 18, lines 4-6; page 30, line 20 – page 31, line 5.

<sup>21</sup> See specification at page 30, line 20 – page 31, line 2.

<sup>22</sup> See specification at page 31, lines 9-12.

<sup>23</sup> See specification at page 13, lines 8-16, page 14 lines 23-24, page 31, lines 12-14.

<sup>24</sup> See specification at page 40, line 22 – page 41, line 5.

<sup>25</sup> See specification at page 13, lines 11-19.

As detailed below, Appellants believe that the Examiner has improperly applied the combination of the *Hudetz*, *Ogasawara*, and *Simonoff* references to claims 22-27. Specifically, Applicants submit that the §103 rejections based on the combination of *Hudetz*, *Ogasawara*, and *Simonoff* are not proper and are without basis, and that the Examiner has failed to state a *prima facie* case as to the combination of *Hudetz*, *Ogasawara* and *Simonoff* constituting a viable combination of references under 35 U.S.C. § 103.

## **VII. Argument and Discussion.**

In order to prevail, Appellant must show that Examiner has improperly combined *Hudetz*, *Ogasawara*, and *Simonoff* in support of the 35 U.S.C. § 103. As such, a brief discussion of the relevant rules and recent court decisions affecting a proper rejection under 35 U.S.C. § 103 follows.

### **A. Rejections under 35 U.S.C. §103**

MPEP §2142 specifies that:

The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

In regard to what an examiner must show in order to establish a *prima facie* case of obviousness, MPEP §2142 further explains that:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. . . . Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

In regard to what an examiner must do in order to meet the first criterion for a *prima facie* rejection, MPEP §2143.01 specifies that:

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention

where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art.

In the present application, the various combinations of references proposed by the Examiner are not supported by a proper suggestion or motivation to make each proposed modification. This means that the first criterion for a *prima facie* rejection has not been met, which in turn means the Examiner has failed to carry the burden of establishing a *prima facie* rejection. In addition, certain claim limitations are not taught or suggested by the cited combinations, which means that the third criterion for a *prima facie* rejection has not been met, and that the Examiner has further failed to carry the burden of establishing a *prima facie* rejection for this independent reason. Further, the Examiner has failed to put forth any arguments and has not provided any articulated reasoning as to how any deficiency (missing element) could be solved in a predictable manner through combination with any other reference.

## **B. Recent Decisions Affecting a Finding of Obviousness.**

### **1. In re Kahn.**

With respect to obviousness, a claimed invention is unpatentable if the differences between it and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.”<sup>26</sup> Obviousness is a question of law, based upon underlying factual questions which are reviewed for clear error following a bench trial. These “underlying factual inquiries include: (1) The scope and content of the prior art; (2) The level of ordinary skill in the prior art; (3) The difference between the claimed invention and the prior art; and (4) Objective evidence of nonobviousness.”<sup>27</sup>

In *Kahn* the Court noted that:

“...to reject claims in an Application under § 103, an Examiner must show an un rebutted *prima facie* case of obviousness . . . on appeal to the board, an Applicant can overcome a rejection by

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<sup>26</sup> 35 U.S.C. § 103(a) (2000); *In re Kahn*, 441 F.3d 977, 985 (Fed. Cir. 2006) (citing *Graham v. John Deere Co.*, 383 U.S.1, 13-14, 86 S.Ct. 684, 15L, Ed. 2d 545, 1962)

<sup>27</sup> *In re Dembiczak*, 175 F.3d 994, 998 (Fed. Cir. 1999).

showing insufficient evidence of a *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.”<sup>28</sup>

When combining references, it is well recognized that “[m]ost inventions arise from a combination of old elements and each element may often be found in the prior art.”<sup>29</sup> “However, mere identification in the prior art of each element is insufficient to defeat the patentability of the combined subject matter as a whole.”<sup>30</sup> *Kahn* further states:

Rather, to establish a *prima facie* case of obviousness based on a combination of elements disclosed in the prior art, the Board must articulate the basis on which it concludes that it would have been obvious to make the claimed invention. *Id.* In practice, this requires that the Board “explain the reasons one of the ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.” *Id. at 1357-59.* This entails consideration of both the “scope and content of the prior art” and the “level of ordinary skill in the pertinent art” aspects of the Graham test.<sup>31</sup>

The primary test that has been put forth by the Federal Circuit is the teaching-suggestion-motivation test. *Kahn* set forth that, when there is no explanation provided by the Board to explain the motivation, or the suggestion or the teaching, that would have led a skilled artisan at the time of the invention to the claimed combination as a whole, then the court would infer that hindsight was utilized to conclude that the invention was obvious. *Kahn* relied upon the *Rouffett* case for this teaching at 1358. The “teaching-suggestion-motivation” requirement was set forth to protect against the entry of hindsight into the obviousness analysis, a problem which §103 was meant to confront. Thus, in order to establish a *prima facie* case, some explanation as to teaching, suggestion, or motivation of each of the references and how they can be combined is required.

Although *Kahn* sets forth the teaching-suggestion-motivation test, there is still the “analogous-art” test that must be applied, this being one test that was articulated by the Supreme

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<sup>28</sup> *Kahn*, 441 F.3d at 985

<sup>29</sup> *In re Rouffett*, 149 F.3d 1350, 1357

<sup>30</sup> *Kahn*, 441 F.3d at 986, citing *Rouffett*, 149 F.3d at 1355, 1357

<sup>31</sup> *Kahn*, 441 F.3d at 986

Court as part of the *Graham* analysis.<sup>32</sup> “The analogous-art test requires that the Board show a reference is either in the field of the Applicant’s endeavor or is reasonably pertinent as to the problem with which the inventor was concerned in order to rely on that reference as a basis for rejection.”<sup>33</sup> The following was further stated by *Kahn*:

References are selected as being reasonably pertinent to the problem based on the judgment of a person having ordinary skill in the art. *Id.* (“It is necessary to consider the reality of the circumstances, in other words, common sense--in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.” (quoting *In re Wood*, 599 F.2d 1032, 1036 (C.C.P.A. 1979))). We have explained that this test begins the inquiry into whether a skilled artisan would have been motivated to combine references by defining the prior art relevant for the obviousness determination, and that it is meant to defend against hindsight. See *id.*; *In re Clay*, 996 F.2d 656, 659-60 (Fed. Cir. 1992).<sup>34</sup>

As such, the first step of analyzing the combination provided by the Examiner is to examine the references and determine if the combination satisfies the analogous-art test. The next step for determining obviousness is to analyze the teaching-suggestion-motivation test which:

... picks up where the analogous art test leaves off and informs the *Graham* analysis. To reach a non-hindsight driven conclusion as to whether a person having ordinary skill in the art at the time of the invention would have viewed the subject matter as a whole to have been obvious in view of multiple references, the Board must provide some rationale, articulation, [\*\*23] or reasoned basis to explain why the conclusion of obviousness is correct. The requirement of such an explanation is consistent with governing obviousness law, see § 103(a); *Graham*, 383 U.S. at 35; *Dann*, 425 U.S. at 227-29, and helps ensure predictable patentability determinations.<sup>35</sup>

Even if all of the elements of a claim are disclosed in various prior art references, the long-standing rule that a claimed invention, as a whole<sup>36</sup>, cannot be said to be obvious unless

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<sup>32</sup> See *Dann v. Johnston*, 425 U.S. at 219, 226, 96 S.Ct. 1393, 47 L.Ed 2d 692 (1976).

<sup>33</sup> *Kahn*, 441 F.3d at 987.

<sup>34</sup> *Id.*

<sup>35</sup> *Id.*

<sup>36</sup> *In re Hiraro*, 535 F.2d, 67, (C.C.P.A. 1966).

there is some reason or motivation given in prior art why someone would have been prompted to combine the teachings or the references.<sup>37</sup> The prior art itself may suggest desirability of a combination, or the motivation may come from other sources (for example, economic factors).<sup>38</sup> Thus, the motivation to combine the relevant art or teachings does not have to be found explicitly in the prior art but, rather, can be implicit thereto. “However, rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”<sup>39,40</sup> The purpose of such requirement is to ensure “due process and non-arbitrary decision making”, as it is in § 103.<sup>41</sup>

*Kahn* articulated the considerations for motivation when analyzing obviousness. The Court stated “the problem examined is not the specific problem solved by the invention, but the general problem that confronted the inventor before the invention was made.”<sup>42</sup> In the reference in *Cross*, the quote that was cited by the Court<sup>43</sup> was that “one of ordinary skill in the art need not see the identical problem addressed in the prior art reference to be motivated to apply its teachings.” As to motivation, the Courts upheld that the evidence of motivation to combine the prior art references “may flow from the prior art references themselves, knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved.”<sup>44</sup> *Kahn* summarized the motivation-suggestion-teaching test as follows:

Therefore, the “motivation-suggestion-teaching” test asks not merely what the references disclose, but whether a person of ordinary skill in the art, possessed with the understandings and knowledge reflected in the prior art, and motivated by the general problem facing the inventor, would have been led to make the

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<sup>37</sup> *In re Regel*, 526 F.2d, 1399 (C.C.P.A. 1975); *In re Bond*, 910 F.2d, 831, (Fed. Cir. 1990).

<sup>38</sup> See e.g. *In re Clinton*, 527 F.2d 1226 (C.C.P.A. 1976); *Cable Elec. Prods., Inc. v. Genmart, Inc.*, 77 F.2d, 1015 (Fed. Cir. 1985).

<sup>39</sup> *Kahn*, 441 F.3d at 998 referring to *Lee*, 277, F.3d at 1343-46 and *Rouffett*, 149 F.3d at 1355-59.

<sup>40</sup> It is noted that the Supreme Court in the recently decided case, *KSR International Co. v. Teleflex Inc.*, et al., 127 S. Ct. 1727 (2007) cited this specific language at page 1741 therein.

<sup>41</sup> *Kahn*, 441 F.3d at 998 referring to *Lee*, 277, F.3d at 1343-46 and *Rouffett*, 149 F.3d at 1355-59.

<sup>42</sup> *Id.* at 988, referring to *Cross Medical Products, Inc. v. Metronics Sofamore Danek, Inc.*, 424 F.3d 1293, 1323 (Fed. Cir. 2005).

<sup>43</sup> *Cross*, 424 F.3d at 1323.

<sup>44</sup> *Medichem I.V.*, 437 F.3d at 1165, quoting *Brown and Williamson Tobacco Corp. v. Phillip Morris, Inc.*, 229 F.3d, 1120, 1125 (Fed. Cir. 2000).

combination recited in the claims. See *Cross Med. Prods.*, 424 F.3d at 1321-24. From this it may be determined whether [\*\*26] the overall disclosures, teachings, and suggestions of the prior art, and the level of skill in the art—i.e., the understandings and the knowledge of persons having ordinary skill in the art at the time of the invention—support the legal conclusions of obviousness. See *Princeton Biochemicals*, 411 F.3d at 1338 (pointing to evidence supplying detailed analysis of the prior art and the reasons one of ordinary skill would have possessed the knowledge and motivation to combine).<sup>45</sup>

In *Alza Corporation v. Mylan Laboratories, Inc.*, 464 F.3d 1286 (Fed. Cir. 2006), the Federal Circuit has responded to arguments made during pendency of the recently decided Supreme Court case, *KSR International Co v. Teleflex Inc., et al.*, 127 S. Ct. 1727 (2007) and has spelled out its law on obviousness, insisting that it is in harmony with Supreme Court precedent.

In the facts of this case, *Alza* sued Mylan for infringement of its patent (6,124,355) under 35 U.S.C. §271(c)(2) after Mylan sought FDA approval to market a generic version of oxybutynin, a drug used to treat urinary incontinence. The Federal Circuit affirmed the obviousness and non-infringement decisions of the district court.

In the process, Judge Arthur Gajarsa dedicated five pages of his opinion to then outline the Federal Circuit's law on obviousness, responding to many arguments made in the then pending Supreme Court case of *KSR Int'l Co. v. Teleflex, Inc.* (U.S. No. 04-1350). *KSR* and many amici, including the U.S. government, have challenged the Federal Circuit rule that proof of obviousness must include a showing of a “teaching, suggestion, or motivation” to combine the prior art elements of the claimed invention. *KSR* and others have said that this requirement is too rigid and is inconsistent with Supreme Court decisions issued since *Graham v. John Deere Co.*, 383 U.S. 1 (1966).

Judge Gajarsa wrote the following in his *Alza* opinion:

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<sup>45</sup> *Kahn*, 441 F.3d at 988.

This requirement has been developed consistent with the Supreme Court's obviousness jurisprudence as expressed in *Graham* and the text of the obviousness statute that directs us to conduct the obviousness inquiry "at the time the invention was made" 35 U.S.C. §103. As we explained in [*In re Kahn*, 441 F.3d 977 (Fed. Cir. 2006)],

The motivation-suggestion-teaching test picks up where the analogous art test leaves off and informs the *Graham* analysis. To reach a non-hindsight driven conclusion as to whether a person having ordinary skill in the art at the time of the invention would have viewed the subject matter as a whole to have been obvious in view of multiple references, the Board must provide some rationale, articulation, or reasoned basis to explain why the conclusion of obviousness is correct. The requirement of such an explanation is consistent with governing obviousness law . . .

441 F.3d at 987. We further explained that the "motivation to combine" requirement "[e]ntails consideration of both the 'scope and content of the prior art' and 'level of ordinary skill in the pertinent art' aspects of the *Graham* test." *Id.* at 986.

At its core, our anti-hindsight jurisprudence is a test that rests on the unremarkable premise that legal determinations of obviousness, as with such determinations generally, should be based on evidence rather than on mere speculation or conjecture. Our court's analysis in *Kahn* bears repeating:

A suggestion, teaching, or motivation to combine the relevant prior art teachings *does not have to be found explicitly in the prior art*, as "the teaching, motivation, or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references.... The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." However, rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be *some* articulated reasoning with *some* rational underpinning to support the legal conclusion of obviousness. This requirement is as much rooted in the Administrative Procedure Act [for our review of Board determinations], which ensures due process and non-arbitrary decision making, as it is in § 103.



441 F.3d at 987-88 (quoting *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000)) (citations omitted) (emphases added). There is flexibility in our obviousness jurisprudence because a motivation may be found *implicitly* in the prior art. We do not have a rigid test that requires an actual teaching to combine before concluding that one of ordinary skill in the art would know to combine references. This approach, moreover, does not exist merely in theory but in practice, as well. Our recent decisions in *Kahn* and in [*Cross Med. Prods., Inc., v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293 (Fed. Cir. 2005)] amply illustrate the current state of this court's views.<sup>46</sup>

## 2. KSR

The recently issued Supreme Court Case in *KSR* has basically held that the Federal Circuit's Teaching, Suggestion or Motivation (TSM) test to combine known elements in order to show that the combination is obvious is too rigid. The Court reinforced their position that analysis under *Graham* has been reaffirmed. The Court indicated that its holding was that a "patent for a combination which only unites old elements with no change in their respective functions . . . obviously withdraws what is already known into the field of its monopoly and diminishes the resources available to skillful men."<sup>47</sup> The Court stated that this was a "principal reason for declining to allow patents for what is obvious. The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results."<sup>48</sup> The Court further went on to indicate that there were three cases that illustrated the application of this doctrine of predictability. The first case was *United States v. Adams*, 383 U.S. 39, 40 (1966). In discussing this case, the Court noted that it had "relied upon the corollary principal that when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be non-obvious."<sup>49</sup> In the second case, *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969), the Court reiterated "while the combination of old elements performed a useful function, it added nothing to the nature and quality of the radiant-heat burner already patented."<sup>50</sup> In the third case, *Sakraida v. AGPro, Inc.*, 425 U.S. 273 (1976), the Court stated that "when a patent 'simply

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<sup>46</sup> *Alza Corporation v. Mylan Laboratories, Inc.*, 464 F.3d 1286, 1290 (Fed. Cir. 2006).

<sup>47</sup> *KSR*, 127 S. Ct. 1727, 1739 (2007), Citing *Great Atlantic & Pacific Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 152 (1950).

<sup>48</sup> *Id.*

<sup>49</sup> *Id.* at page 1740.

<sup>50</sup> *Id.*

arranges old elements with each performing the same function it had been known to perform' and yields no more than one would expect from such an arrangement, the combination is obvious."<sup>51</sup>

The Court summarized these three cases as follows:

The principles underlying these cases are instructive when the question is whether a patent claiming the combination of elements of prior art is obvious. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. *If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability.* For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* and *Anderson's-Black Rock* are illustrative—a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.<sup>52</sup> (Emphasis added.)<sup>53</sup>

The Court recognized that following the above stated principals might involve more than “the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement.”<sup>54</sup> The Court noted that it might “be necessary for a Court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent that issued.”<sup>55</sup> However, the Court also noted that the analysis should be “made explicit” citing *Kahn* wherein it stated that “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead there must be some articulated reason with some rational

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<sup>51</sup> *KSR*, 127 S. Ct. at page 1740, Citing *Sakraida* at 282.

<sup>52</sup> *Id.*

<sup>53</sup> *Id.*

<sup>54</sup> *Id.*

<sup>55</sup> *Id.* at page 1741

underpinning to support the legal conclusion of obviousness.”<sup>56</sup> The Court noted that, however, “the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.”<sup>57</sup>

Although the Court in this opinion rejected the rigidity of the TSM test, there was some reference to the decision in *Alza* wherein the Court noted the Federal Circuit’s position that “there is flexibility in our obviousness jurisprudence because the motivation may be found *implicitly* in the prior art. We do not have a rigid test that requires an actual teaching to combine . . . ,” citing *Alza*, 464 F.3d at 1291.<sup>58</sup> However, the Court also noted that the *Alza* decision was not before it and that, although they may describe an analysis more consistent with the Court’s earlier precedence, the Court of Appeals would have to consider the current decision in view of its future cases.

### **C. 35 U.S.C § 103 Rejection in the Application on Appeal.**

The Examiner stated in the Final Office Action dated May 18, 2006:

Hudetz et al. disclose providing in response to the step of scanning and the step of associating, connecting the first location to the second location. (Hudetz et al. Disclosures in col. 11 lines 4-10 that once the unique value i.e. the number address encoded in the bar code is extracted, it is associated by the service provider with the first location computer.) However, there is no disclosure of the input device ID permanently associated with the input device and independent of the first location. However, Ogasawara does disclose such a permanently associated ID telephone number see col. 10 lines 1-41. It would be obvious to modify the Hudetz et al to include such an ID because the motivation would be to allow the input device 120 to be free of a base station. Additionally, Hudetz et al fail to disclose the unique ID is associated with the message packet. However, Simonoff et al. disclose in col. 11 lines 13-68 disclosed a unique ID with is commonly associated with a message (value) between different locations. It would further be obvious to modify the aforesaid combination to include the unique ID

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<sup>56</sup> *Id.*

<sup>57</sup> *KSR*, 127 S. Ct. at page 1741.

<sup>58</sup> *Id.* at page 1743.

commonly associated with a value between two locations, the motivation being the ability to communicate between differently designed systems. In addition to this, Ogasawara discloses in col. 10 lines 43-46 that each message coming from a wireless telephone 18 is associated with the customer's telephone number, customer ID or some other unique identifier". Thus it would have been obvious to include such a feature in Hudetz et al. because this would insure that the message packet would be routed to the assigned device i.e. telephone 18 through by whatever route is possible.<sup>59</sup>

Appellants submit that the Examiner simply has broken Appellants' invention into its component parts and then attempted to find a prior art reference corresponding to each component to support an obviousness rejection under 35 U.S.C. § 103. In order to establish a *prima facie* case of obviousness using the combination of *Hudetz*, *Ogasawara* and *Simonoff* the Examiner must first show that each of the references is analogous prior art and then provide an explanation as to whether the overall disclosures of the references, the teachings therein and the suggestions associated therewith, in addition to the level of skill in the art, support a conclusion of obviousness as it relates to the entire invention. Appellants submit that the Examiner's combination of *Hudetz*, *Ogasawara* and *Simonoff* is conclusory, and that no articulated reasoning with some rational underpinning to support the combination has been provided. Further, Appellants submit that support for the combination is based on hindsight and that the combination is improper.

**1. Independent Claim 22 as rejected by the combination of *Hudetz*, *Ogasawara*, and *Simonoff*.**

In the Final Office Action mailed May 18, 2006, the Examiner maintains his 35 U.S.C. § 103 rejection of Claims 22-27. On page 2 of the Final Office Action the Examiner states:

Hudetz et al. disclose providing an input device 120 at the first location on the global communication network having associated therewith a unique input device ID ( the address of every computer is notoriously well know [sic] to be transmitted by a PC to a server); notwithstanding, since applicant admits that the computer 28 does indeed have its own address then, because the computer

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<sup>59</sup> See Final Office Action dated May 18, 2006 at page 2.

also has an input device 44, then the computer is read as an input device having an input ID. Hudetz et al. further disclose scanning a product code disposed on a product with the input device (col. 11, lines 31-32), which product code is representative of the product in commercial transactions, the step of scanning operable to extract the information contained in the product code to provide a unique value as an output is read as the numeric address encoded in bar code).<sup>60</sup> [sic]

The Examiner further states that “. . . there is no disclosure of the input device ID permanently associated with the input device and independent of the first location. However, Ogasawara does disclose such a permanently associated ID telephone number see col. 10 lines 1-41. It would be obvious to modify Hudetz et al to include such an ID because the motivation would be to allow the input device 120 to be free of a base station.”<sup>61</sup>

## **2. The Cited References – Analogous-Art Test.**

In the non entered Response dated November 20, 2006, to the Office Action dated May 18, 2006, the arguments thereof repeated herein, Appellants question whether the combination of *Hudetz* with *Ogasawara* and/or *Simonoff* constitute analogous art. The Examiner provided *Ogasawara* to cure the deficiencies in *Hudetz* regarding the permanently affixed device ID, namely for the disclosure of a “permanently associated ID telephone number” with a device.<sup>62</sup> (See the Office Actions dated May 18, 2006, February 28, 2005, September 7, 2004, and December 23, 2003.) *Simonoff* is provided for the purpose of supporting the “unique ID” which is commonly associated with a message (value) between different locations.<sup>63</sup> (See the Office Actions dated May 18, 2006, February 28, 2005, and September 7, 2004.)

### **a. Discussion of U.S. Patent No. 5,978,773 to Hudetz et al.**

The primary reference cited by the Examiner is *Hudetz*. The primary purpose of *Hudetz* is to provide a better way for customers and others to access web-sites without having to enter a complicated URL,<sup>64</sup> which is facilitated by entering a barcode or other indicia that is associated

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<sup>60</sup> See non entered Final Office Action dated May 18, 2006 at page 2, Exhibit E.

<sup>61</sup> See non entered Final Office Action dated May 18, 2006 at page 2, Exhibit E.

<sup>62</sup> See *Ogasawara* at column 10, lines 1-41.

<sup>63</sup> See *Simonoff* at column 11, lines 13-16.

<sup>64</sup> See *Hudetz*, Col. 1, line 17-19.

with a product or other article of commerce. Specifically, *Hudetz* provides a means for a user to enter a product code on a manufactured item, such as a can of vegetables.

When a user sets a system up as disclosed in *Hudetz*, the system must first provide to the user a “query page” in a browser software that provides access to a database.<sup>65</sup> The database contains records, wherein each record contains a UPC number of a product, a particular URL associated with the product, and a narrative description. The UPC is 10 digits, with the first five digits identifying the product manufacturer and the last five digits identifying the manufacturer’s particular product. Once the query page is displayed on the user’s computer, the user may enter a query, such as the product UPC information, into the query page. However, the user may enter alternative search terms as well.<sup>66</sup> The disclosure makes a clear distinction that a user can be a human that loads the browser software, or the process may be run by a machine. The user may input the 10-digit sequence associated with the entire UPC code, or the user may input only the first 5 digits that are associated with the product manufacturer. The user has the option of inputting the code using a scanning operation. In a scanning operation, the user can scan multiple UPC codes and transmit all of these to the database at one time. Depending on the user’s entry, either the entire 10 digit code, or just the first five digits, are transferred to the database. The database then retrieves all of the records that have matching UPC fields. Then, the database is operable to perform a look-up operation. The database performs a matching operation to determine if any portion of the information from the scanned code is in the database, and returns the matching records.

In general, a query is the transfer of the UPC code to the database. The query returns an associated URL that is associated in the database for that particular scanned code to the user. Thereafter, the query page is transmitted to the user’s computer in the form of an HTML document to be displayed.<sup>67</sup> The HTML document transmitted to the user’s computer contains the records retrieved in the query. The records are displayed for the user, and the user is provided the option of clicking on a particular record to go to a website that is previously associated with the UPC information.

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<sup>65</sup> See *Hudetz*, Col. 8, lines 21-24.

<sup>66</sup> See *Hudetz*, Col. 7, lines 43-63.

<sup>67</sup> See *Hudetz*, Figure 6.

Alternate embodiments of *Hudetz* reference provide an “automatic jumping” to a desired location. “Automatic jumping” requires the user to set a flag that examines the returned HTML document and selects the URL for the user. “Automatic jumping” is useful because a query can return multiple records, and is an alternative to displaying the multiple-record query results. However, *Hudetz* offers no disclosure as to how the “automatic jumping” would be facilitated.

**b. Discussion of U.S. Patent No. 6,577,861 to *Ogasawara*.**

*Ogasawara* discloses an electronic shopping system that, as set forth in the Abstract, “facilitates purchase transactions via a wireless telephone.” In one embodiment, the wireless telephone is utilized for the purpose of connecting to a store server or to a remote server. The store server transfers a program to the phone each time the phone connects to the server. The transferred, i.e., downloaded, program enables the phone to scan a barcode and send the barcode, and information identifying the source of the transmission, to the store or remote server. The store server, or remote server, uses the scanned code to retrieve the scanned product information and price, and returns it to the user. The store or remote server interfaces the transaction with the user profile for the purpose of updating user records, storing scan codes for items to be purchased, and even storing scan codes for items that are not purchased but which may have been looked at. The database does not associate the scanned code that is transmitted with the telephone number of the user.

When a user enrolls in the system, the user’s telephone number, telephone type, and password are registered, along with a customer ID, customer name, and any other desired customer profile information.<sup>68</sup> The server uses the telephone number to identify the customer (“user”) and the type of wireless phone. The server downloads a program to the wireless phone based on the capabilities identified by customer profile information associated with the telephone number. The user must enter a password for customer verification. The downloaded scanned product information and program also serves to facilitate payment for the purchases. Therefore, for the purposes of the *Ogasawara* disclosure, the telephone number of a user is utilized merely to allow identification and verification of the user prior to returning any information to the user.

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<sup>68</sup> See *Ogasawara*, column 5, lines 30-35.

The telephone number is not used to identify a return path to transmit information to the user because the user and the server have previously established an open communication. It is not used as a unique ID for the telephone.

Using the *Ogasawara* system, a user can scan a code, enter the code into the server such that a running list is kept under that user's name, and then utilize the phone to complete a transaction at a later time by scanning in the code of a cash register. Thus, the scanned-in codes are maintained in a database in association with that telephone number *after* transmission and not before. The association of the telephone number with a customer is for the purpose of maintaining credit card and similar information and to track the shopping habits of the user. The *Ogasawara* reference discloses a device that is nothing more than a telephone that operates as a scanner, using downloaded software, that functions to request information regarding a scanned code that is totally separate from the telephone number. *Ogasawara*, for this purpose, is no different than any Point Of Sale (POS) terminal.

**c. Discussion of U.S. Patent No. 6,078,321 to Simonoff et al.**

The *Simonoff* reference provides for computer systems of varying architecture to be connected in a network to be able to run the same application software without modification or recompilation. The various nodes are referred to as “universal client devices.” The server is adapted to interface with the varying types of architecture provided by the different types of universal client devices connected to the network. The particular operation of assigning a particular ID to a particular universal client device is set forth in column 11, beginning at line 12 as follows:

After the Universal Client device on the client host 300 establishes the Transmission Control Protocol/Internet Protocol (TCP/IP) socket connection, the host server 100 immediately responds, in an exemplary case, to the Universal Client device with the characters “(Client:you\_are\_id\_number),” where id\_number is a unique 8-digit integer, during step 4. It will be appreciated that a computer generated server host socket hashcode value is generally recommended for id\_number, since it is guaranteed to be unique and since it identifies the logical socket connection between the server host 100 and the client host 300 running the Universal



Client device. It should be mentioned that the server host 100 advantageously can selectively send GUI-Script to multiple client hosts 300a-300r, as shown in FIG. 2 by filtering the ID\_number.<sup>69</sup>

Thus, the ID is *not permanently affixed* to a particular device. The server assigns an ID for the purpose of recognizing a client device on a network during a communication session, i.e., as a source or distribution address.

### **3. Conclusion – Analogous Art Test.**

*Hudetz* is a system that scans for the purpose of returning information based upon looking up a URL, and could be considered analogous-art. As described above, *Hudetz*, although possibly analogous, is deficient in supporting the 35 U.S.C. § 103 rejection alone because it does not disclose a device with a permanently affixed unique ID that is independent of a first location, or a unique ID that is associated with a message packet.

*Ogasawara* discloses a system that provides information to a user in response to the user scanning the UPC code of a product, wherein the scanned code is transmitted via an existing open communication between the user's telephone and a server, for the purposes of completing a commercial transaction, i.e., shopping. *Ogasawara* relies upon the user's telephone number to associate and verify a user with a previously stored user profile. The Examiner is relying on *Ogasawara* for the element "the input device having associated therewith a unique input device ID that is permanently associated with the input device and independent of the first location" of Appellants' Claim 22 missing from *Hudetz*.

Appellants previously argued in its non entered Response of November 20, 2006, that the remaining portion of *Ogasawara*, that portion associated with utilizing the telephone number to complete a transaction, etc., is not related to *Hudetz* and is not analogous-art.<sup>70</sup> First, a scanner is different from a telephone. Second, an ID that is permanently affixed in a scanner is permanently affixed such that neither the user nor anyone else can change it. The unit is shipped with the permanently affixed ID, and it is not alterable.

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<sup>69</sup> See *Simonoff*, column 11, lines 12-26.

<sup>70</sup> See Appellants' non entered November 20, 2006 Response at pages 9 & 10, paragraph 15, Exhibit E.

A wireless telephone also has a ID number or serial number in the phone that is permanently fixed in the phone and that is not alterable. However, a wireless telephone's fixed ID or serial number is not a telephone number, as disclosed in *Ogasawara*. In accordance with CDMA technology, a telephone network associates a phone number with a particular phone after the phone has been purchased by a customer. The particular phone number may be assigned to the phone, but it is associated with the customer, as the customer virtually owns that telephone number. In some situations, the phone company owns the telephone number and not the customer. Regardless of who owns the telephone number, that telephone number is not associated permanently with the telephone. If the customer upgrades their telephone or switches service providers, the telephone number can be transferred to the new phone, or transferred to the new service provider, i.e., a different physical device. At best, the telephone number is associated with the customer and not with the physical device.

Appellants fail to see how *Ogasawara* constitutes analogous art. One skilled in the art would not look toward a telephone unit, especially a wireless telephone unit, for the purpose of providing a scanner with a “permanently affixed unique ID,” especially since the Examiner seeks to apply a *transient telephone number* from the *Ogasawara* system as analogous art in this instance. Therefore, Appellants submit that the *Ogasawara* reference is not an analogous reference with respect to this element.

*Simonoff* discloses a system for a server to interface with “universal client devices,” or computer systems of varying architecture. It is directed mainly to networking the universal client devices to allow those computer systems to run the same application software without modifications or recompilation. The server performs an operation wherein it assigns an ID to a networked computer system during a communication session, i.e., during the transmission and receipt of message packets. The server assigns the ID to function as a source or distribution address. The ID is not permanently affixed within the computer system – it is provided to the computer system by the server. The Examiner is relying on *Simonoff* to supply a “unique ID [that] is associated with the message” that is missing from the *Hudetz* reference.<sup>71</sup>

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<sup>71</sup> See Final Office Action dated May 18, 2006 at page 2.

Specifically, the Examiner combines *Simonoff* to:

. . . disclose in col. 11 lines 13-68 disclosed [sic] a unique ID which is commonly associated with a message (value) between different locations. It would have been further obvious to modify the aforesaid combination to include the unique ID commonly associated with a value between two locations, the motivation being the ability to communicate between differently designed systems. In addition to this, Ogasawara discloses in col. 10 lines 43-46 that each message coming from a wireless telephone 18 is associated with the customer's telephone number, customer ID or some other unique identifier. Thus it would have been obvious to include a feature in Hudetz et al. because this would insure that the message packet would be routed to the assigned device i.e. telephone 18 through by whatever route is possible.<sup>72</sup>

A software ID that is provided to a computer system that functions to uniquely identify a node on a network, but which is not associated permanently with that node, is not analogous-art when a person in the scanner art is seeking to permanently affix a unique ID to a scanner for the purpose of uniquely identifying the scanner. One skilled in the art would not look to the *Simonoff* system to provide a unique ID that is utilized for the purpose of matching as opposed to identifying a source address on a network. Therefore, Appellants submit the *Simonoff* reference is not analogous-art.

*Hudetz*, taken alone, is insufficient to support a finding of obviousness under 35 U.S.C. § 103. The Examiner agrees with this assertion in the Final Office Action dated May 18, 2006 at page 2. Thus, the Examiner provided *Ogasawara* and *Simonoff*. MPEP § 2141.01(a) states that for a prior art reference to be relied upon as basis for a 35 U.S.C. § 103 rejection, then that reference must be analogous prior art. *Ogasawara* and *Simonoff* are not analogous prior art references. Therefore, the use of the non-analogous *Ogasawara* and *Simonoff* references to support an obviousness rejection is improper, and the Examiner has failed to establish a *prima facie* case of obviousness.

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<sup>72</sup> See Final Office Action dated May 18, 2006 at page 2, last paragraph.

#### **4. The Cited References – Teaching/Suggestion/Motivation Test.**

Regardless of whether *Ogasawara* and *Simonoff* are found to analogous art using the analogous-art test, the next step for determining obviousness is to analyze under the teaching-suggestion-motivation test. As previously discussed, the recent *KSR* Supreme Court case indicated that the Teaching-Suggestion-Motivation (TSM) test is not a rigid test; however, it is still considered to be a factor. Under this test, each of the references must contain some type of teaching, as well as some type of suggestion, to allow for the combination. One also must be motivated to combine the references. If this test alone were utilized, the questions that must be answered are whether *Hudetz*, *Ogasawara* and *Simonoff* contain any teaching that would suggest to one skilled in the art to combine these three references to overcome the problem addressed by the present application, and whether any motivation to so combine exists.

##### **a. Discussion of Hudetz – TSM Test**

Independent Claim 22 of the instant application, as currently presented, is directed to a method for interconnecting one location on a global communication network i.e., the internet, with the second location thereon. The first step is to provide an input device coupled to the first location on the global communication network. Claim 22 then requires that the input device have associated therewith a unique input device ID that is *permanently associated with the input device* and independent of the first location. Although *Hudetz* discloses a scanner to provide such input device, Appellants and the Examiner agree that *Hudetz* does not disclose a unique ID permanently associated with the input device. Furthermore, *Hudetz* contains no suggestion or teaching of an input device with a unique and permanently associated ID that such would be useful for its intended purpose.

As previously described, the purpose of *Hudetz* is to provide “a system and method for using identification codes found on ordinary articles of commerce to access remote computers on a network.”<sup>73</sup> The problems sought to be solved by *Hudetz* relate to the cumbersome task of entering URLs because URLs can be difficult to remember and difficult to locate. Even when

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<sup>73</sup> See *Hudetz*, Abstract.

remembered or found, URLs are prone to input errors due to their length.<sup>74</sup> A co-pending application of *Hudetz*<sup>75</sup> solved this problem by allowing users to access published locations without having to enter the URL. When the URL is published, it is associated with a barcode such that a barcode reader can be utilized to load this desired numeric address into the browser. However, this created a problem in that the network address can contain upwards of 20-30 characters, thus requiring very long barcode symbols. Further, the lengthy URLs required a manufacturer to redesign their products if the URL encoded bar code was to be placed on a product. Further, if a manufacturer changed its network address, then the package also had to be redesigned.

*Hudetz* provides a way for consumers to access resources on remote systems without entering cumbersome URLs, by utilizing an existing product code, such as a Universal Product Code (“UPC”). The UPC is assigned by the Uniform Code Council, Inc., and consists of two five-digit fields, and provides a machine-readable number, e.g. a barcode. Currently, UPCs are used within commercial transactions for identifying a product manufacturer and the manufacturer’s product. In *Hudetz*, the UPC is repurposed by providing a database containing records that associate the UPC to a remote site on which the corresponding URL is disposed. The barcode may be read by a scanning operation, or a user may manually enter the numeric sequence provided in the two-five digit fields. The barcode information may be transferred to a remote computer or to a local computer to determine an associative link. Product code information, entered via scanning operation or manual input, requires a browser query page to be opened. The entered UPC is transmitted to a database on the network. The system returns an HTML document with a list of all the potential URLs associated with a product code. The user may select the desired resource location from the list.

In its unentered Response dated November 20, 2006, Appellants stated that *Hudetz* provides a system that repurposes a particular barcode for the purpose of returning information to a user in the form of URLs.<sup>76</sup> As states, The solution to all of these problems was arrived at for the purpose of offering a better way for consumers and others to access resources on remote

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<sup>74</sup> See *Hudetz* at column 2, lines 37-40.

<sup>75</sup> See *Hudetz* at column 2, lines 52-67.

<sup>76</sup> See unentered Response dated November 20, 2006, page 14, paragraph 21, Exhibit E.

computers, particularly websites. This was set out in the Summary of the Invention section. This solution is to utilize an existing product code, which product code has a predetermined purpose, and then “repurposing” this barcode by providing a remote site on which the URL is disposed in association with the barcode. This requires merely the reading of the barcode and transferring of this barcode to a computer, either remote or local, for the purpose of determining the associative link. This requires the opening of a browser or a query page, entry of the various barcodes, sending of the query and then the return of an HTML document with all of the potential responses. Thereafter, the user can select a particular location from this list. Therefore, in summary, *Hudetz* provides a system that repurposes a particular barcode for the purpose of returning information to a user in the form of URLs. *Hudetz* has no suggestion or need for any type of ID because it is not concerned with “filtering” the URLs returned by any information other than by the scan code. *Hudetz* discloses only the entering of UPC information into the system. The scanned or manually entered UPC information is transmitted for the purpose of performing a “match” operation in the database, and the results of that “match” operation are returned to the user in the form of URLs in a displayed HTML document. *Hudetz* allows the user the option of entering only the first five characters of the UPC, in which case all products associated with those the first five characters of the code are returned and displayed to the user. *Hudetz* contains no suggestion or teaching of the need for providing any type of ID in association with either the scanning device or a device ID that is permanently associated with the scanning device and further providing this in a way that it is independent of the location at which the scanner is disposed. Such an ID would not further the purpose of *Hudetz*, or aid in solving the stated problems therein.

Claim 22 also discloses the element of scanning a product code disposed on a product with the input device. *Hudetz* discloses the operation of scanning a product code, and the product code is one that is representative of the product in commercial transactions. The step of scanning is operable to extract the information contained in the product code and thus provides a unique value. Appellants submit that *Hudetz* discloses this element.

Further Claim 22 discloses the step of associating the unique input device ID in a message packet, such that the unique input device ID is associated with the message packet for

transmission over the network, and wherein the second location has a predetermined association with the combination of the unique value and the unique input device ID, such predetermined association associates the second location with both the unique device ID and the unique value. The Examiner is utilizing *Hudetz* for the purpose of indicating that the unique input ID is associated with a message packet.<sup>77</sup> Appellants disagree with this assertion. The Examiner is reading the computer with the input device as providing a computer that provides an input device having an input ID. Appellant notes that a Network Interface Card (NIC) does, in fact, have a unique ID. However, in NIC ID is only useful in the local area network. If the computer is connected to a remote location over a global communication network, the NIC ID no longer is sent to the remote location and is not “associated” with the unique value. In such a remote connection, however, an IP address must be associated with the computer. The association of an IP address with the computer is accomplished through the use of a router. Utilizing a router, a dynamic address is associated with a particular computer when it is turned on. The router assigns the address to the computer. When the computer sends a message back through the router, the dynamic IP address is modified at the router and at various other locations along the network. The purpose of this modification is to insure that a return packet can be transferred back to that computer. However, the dynamic IP address is not unique to the computer or scanning device. Further, the ID is only unique to the scanning device *when it is attached to the computer*. As such, the dynamic ID is unique only temporarily to the computer and not to the scanner unless the computer has an integral scanner associated with it. *Hudetz* contains no disclosure of the ID being unique to anything but the computer for a Network Interface Card. No disclosure in *Hudetz* sets forth the use of any ID other than the dynamic IP address, which is neither unique to the computer nor to any scanner attached to the computer. Therefore, reading *Hudetz* to include the computer having the unique ID as set forth in Claim 22, which requires that the unique ID be associated uniquely with the input device, is in error.

Utilizing the invention in Claim 22, a manufacturer ships the device with the unique ID permanently affixed thereto. When a user uses the device, the manufacturer is able to recognize the unique ID associated with that device for the purpose of routing certain information to it.

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<sup>77</sup> See Response dated June 22, 2004, page 4, paragraph 4.

Additionally, *Hudetz* only discloses providing the unique value associated with the barcode. *Hudetz* provides no teaching or suggestion that provides for a unique ID for the input device. Neither does *Hudetz* disclose a combination of a unique value and a unique ID. A unique ID does not enhance or further the solution of providing a better way for consumers and others to access resources on web-sites. A unique ID associated with the input device provides an additional piece of information that may be used as a filtering device to further control the information returned to the user once the user scans a UPC. The unique device ID set forth in Claim 22 has no relationship with a product. It does not allow a user to better access resources on remote computers or better access different remote websites.

*Hudetz* seeks to provide consumers a better way to access URLs associated with particular products. Additionally, *Hudetz* teaches a database containing the UPC code, URL, and a narrative.<sup>78</sup> The URLs returned by the system in *Hudetz* are associated specifically with the 10-digit UPC code of a product. Thus, no disclosure in *Hudetz* provides motivation for one skilled in the art to search further for a solution of also providing a unique input device ID in the scanner for the purpose of later associating an input device ID with the barcode value.

Appellants wish to point out that *Hudetz* does, in fact, disclose the use of a scanner as an input device. However, *Hudetz* specifically teaches that the input device is not limited to a particular type of device, as clearly illustrated by the following:

Because the UPC product identification number is printed in both machine and human-readable format (See FIG. 3), this may be done by manual entry using keyboard, voice recognition system or other input device. More preferably, however, entry is accomplished by scanning UPC symbol 46 affixed to article 48. Input device 44 reads UPC symbol 46, and generates an ASCII character string which is read by CPU 30 via I/O port 38. If the UPC number is scanned, then all 10 digits will generally be entered.<sup>79</sup>

Clearly, *Hudetz* provides numerous input methods including manual entry, voice recognition entry, or entry by another input device. Since additional methods of entry beyond a scanning

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<sup>78</sup> See *Hudetz* at Col. 7, lines 1-20.

<sup>79</sup> See *Hudetz* at column 8, line 34.



operation are disclosed, most notably manual entry and voice recognition entry, *Hudetz* offers no method of permanently affixing a unique ID to the input device and, in fact, teaches away from such use of a unique ID. *Hudetz* is only concerned with retrieval of a URL associated to a UPC code, and does not disclose any need or desire for a unique ID permanently affixed to the input device. According to the disclosure in *Hudetz*, the information transmitted by the input device would have no variation as a result of the user utilizing a particular input device. Therefore, the bar code scanner disclosed in *Hudetz* is of no particular significance because it is easily interchangeable with manual entry or voice recognition.<sup>80</sup> Further, the same resources would be returned to the user regardless of whether the user scanned the product UPC or manually entered the product UPC. The same information would be returned to the user regardless of whether the user used two separate scanning devices to scan the product UPC, or if the user used two separate computers.

According to the present invention, if a single product UPC was scanned by two different scanners, each scanner having its own unique device ID, each scanning operation would result in different information being returned to the user. The input device, with a “permanently affixed unique ID,” provides a way for the manufacturer to control the information that is returned to the user as the result of the user scanning a product UPC. The user has no knowledge of this particular operation. Therefore, it does not facilitate the purpose of *Hudetz*, i.e., to allow a user easier access to web-sites by providing a repurposing engine for a particular barcode.

Thus, to apply *Hudetz* for the purpose of obviating Claim 22 in the present application, the Examiner must show that *Hudetz* contains a teaching, suggestion, or motivation to solve the problem solved by Appellants’ present claims. *Hudetz* must also suggest that, at the time of the invention, a problem existed that could be solved by incorporating a unique input device ID into a scanner, and that the scanner with the unique and permanently affixed device ID could be utilized in the *Hudetz* system for the purpose of allowing a matching operation in a database, wherein the records in the database have a unique association between the input device ID and a UPC. *Hudetz* does not contain any such teaching, suggestion or motivation. In fact, *Hudetz* teaches away from the use of the unique ID and, in accordance with the corollary principle set

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<sup>80</sup> See *Hudetz* at Col. 8 lines 34-40.

forth in *United States v. Adams*<sup>81</sup>, “when the prior art teaches away from combining certain elements, discovery of a successful means of combining them is more likely to be non obvious.”<sup>82</sup>

#### **b. Discussion of *Ogasawara* – TSM Test.**

The Examiner has provided *Ogasawara* to cure the deficiencies in *Hudetz*. Specifically, the Examiner has relied on the *Ogasawara* reference to provide a teaching of an input device having an input device ID *permanently* associated with the input device and independent of the first location. The Examiner indicates support for this reliance in that *Ogasawara* discloses a permanently associated ID telephone number<sup>83</sup>. The specific disclosure sets forth as follows:

Use of the cellular network 17 are avoided. Those skilled in the art will appreciate various other means of providing in-house radio communication between the wireless telephone 18 and the store server 10 are likewise suitable.

In use, a purchaser merely dials the telephone number of the store server 10 or remote server 26 with the wireless telephone 18. Upon connection of the wireless telephone 18 to the store server 10 or the remote server 26, the purchase transaction program is downloaded from the store server 10 or the remote server 26 into the wireless telephone 18 under the direction of a program loader 32 (FIG. 2).

More particularly, the telephone interface of the store server 10 or the remote server 26 facilitates receipt of the telephone call from the customer and downloading of the appropriate purchase transaction program to the wireless telephone 18. The server personal shopping application facilitates sending and receiving of information between the customer’s wireless telephone 18 and the store server 10 or remote server 26. When the store server 10 or remote server 26 is called by the customer’s wireless telephone 18, then the telephone interface obtains the customer’s phone number and then searches the customer information database in the store server 10 or remote server 26 in order to obtain the following information: customer’s telephone number, download program ID, customer ID, and customer name. This information is preferably

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<sup>81</sup> See *United States v. Adams*, 383 U.S. 39, 40 (1966).

<sup>82</sup> *KSR*, 127 S.Ct. at 1740.

<sup>83</sup> See Final Office Action dated May 18, 2006, page 2.

stored in the store server 10 or remote server 26 when the customer enrolls in the personal shopping application. In this manner, the customer's telephone number provides a degree of validation, and thus servers to indicate that the customer is authorized to make purchases.

Based upon the download program ID, the appropriate download program is downloaded from the store server 10 or remote server 26 to the wireless telephone 18. The particular purchase transaction program (which has a unique ID) which is transmitted from the store server 10 or remote server 26 to the wireless telephone 18 is selected so as to be consistent with the purchaser's profile, e.g., telephone type, as well as the purchaser's personal preferences, such as language and particular interests.<sup>84</sup>

The purpose of the telephone number is to provide validation and a reference number for the server to access the user's profile. Once the telephone number is provided to the server, the server searches the customer information database "in order to obtain the following information: customer's telephone number, download program ID, customer ID, and customer name."<sup>85</sup> "[I]n this manner, the customer's telephone number provides a degree of validation, and thus serves to indicate that the customer is authorized to make the purchase."<sup>86</sup> Essentially, the server uses the telephone number as a reference number to access the user's profile. Once the profile is accessed, the server no longer uses the telephone number. Since a communication link is open already, the server does not use the telephone number as a return address to transmit information back to the telephone. As the user scans articles for purchase, and even when the user proceeds to pay for the scanned articles, only the scanned information is transmitted to the server. The information returned from the server to the user is based only on the scanned product codes. The Examiner indicated that "it would be obvious to modify *Hudetz et al.* to include such an ID because the motivation would be to allow the input device 120 to be free of a base station."<sup>87</sup> However, the purpose of the scanner and the use of the unique ID is not associated with being free of any type of base station or location. The purpose of the scanner and the use of the unique ID has nothing to do with being free of any type of base station or location. The purpose is to

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<sup>84</sup> See *Ogasawara*, column 10, lines 1-41.

<sup>85</sup> See *Ogasawara*, column 10, lines 23-25.

<sup>86</sup> See *Ogasawara*, column 10, lines 27-31.

<sup>87</sup> See Final Office Action dated May 18, 2006, page 2.

provide a scanner that is associated more with a retailer and not with the location itself, i.e., it is not location specific. The unique ID itself is utilized for the purpose of filtering and determining what the information is that is returned to the user.

In order to provide motivation to combine with *Hudetz*, *Ogasawara* would have to provide some type of ID that was both permanently associated with the particular input device and which had the purpose of being stored in a database. *Ogasawara* discloses nor suggests neither. In *Ogasawara*, the telephone number is merely for the purpose of providing access to account information and, accompanied with a password, validating that the user is in the database. The telephone number must preferably be pre-registered to facilitate confirmation that the customer is a valid customer. Verification of the customer telephone number inhibits the making of unauthorized purchases by people other than the authorized customer. The purpose for this is to append the users profile information as stored in the database and to allow a user to complete a later transaction after multiple desired items are flagged for purchase.

After initial connection and verification, the telephone number is no longer used. After customer verification, the transaction program is downloaded to the wireless phone and the customer is then able to select items to be purchased. The system operates to display information regarding the selected items on the display of the phone. The transactions can be stored, deleted or accepted. The user can complete a purchase via inputting a credit card number, using a pre-registered credit card number, or by transferring the purchase to a selected checkout counter. Therefore, even though a barcode may be sent in association with, or shortly after, a particular telephone number is sent, the barcode indicates that information is requested, and there is no use of the customer's telephone number in any way to affect what type of information is returned, i.e., all that is needed is the scanned code.

Additionally, the claim requires that this ID be "permanently" associated with the input device. *Ogasawara* discloses a telephone number. A telephone number is unique to a particular customer at that time. The customer contracts with a telephone network or service provider to either own the telephone number or to utilize the telephone number (sometimes certain providers only provide the telephone number as long as the bill is paid, after which, the telephone number

is recycled). Furthermore, the telephone device is a wireless telephone. Wireless telephones do not have a telephone number permanently affixed thereto. They have a serial number. This serial number or ID code stored therein must be sent to a central location to look up the telephone number of the user for the purpose of providing the telephone number in a caller ID function. Thus, the phone itself does not have a telephone number uniquely or permanently fixed thereto – it can be associated with a different telephone at any time by the user. The user can dispose of the telephone and obtain another telephone. Therefore, *Ogasawara* contains no disclosure to provide a user with an input device that has an ID permanently affixed thereto. *Ogasawara* contains no teaching or suggestion of a permanently affixed ID associated with the telephone, that this permanently affixed ID would be useful to facilitate returning “information” to a user based on a barcode other than the information that is always associated with that barcode. Thus, *Ogasawara* does not provide a system that would in any way teach a reason for utilizing a permanently affixed ID in an input device in the *Hudetz* reference.

The Examiner commented, in the Final Office Action (dated May 18, 2006, pages 3 & 4), in regard to this portion of Appellants’ arguments that:

“Applicant argues that nowhere in the art relied on by the Examiner is there a disclosure of the input device permanently affixed thereto . . . provided with a unique identifier. However, *Ogasawara* discloses, in col. 10 lines 43-46, that ‘each message coming from a wireless telephone 18 is associated with the customer’s telephone number, customer ID or some other unique identifier’. Applicant attempts to dilute this statement by stating instead that the wireless phone number ‘is associated with some type of customer phone number . . .’ In *Ogasawara*, col. 10 line 21 it is stated that the customer’s phone number which must be that which is associated with the phone referred to in the immediately preceding part of the sentence is used. Thus regardless of what the phone number is being used for by the system in *Ogasawara*, the phone number still answers the limitation of a unique ID tied to the device 18. The allegation that *Ogasawara* fails to associate the input device and the scanned item is irrelevant because the unique ID tied to the phone 18, which phone is independent of any location, is all that the Examiner is relying on for in the *Ogasawara* reference in reference to claim 22. The motivation for

combining *Ogasawara* and *Hudetz et al.* is set forth in the office action and is considered proper.”<sup>88</sup>

Appellants contend that this is clearly incorrect. Essentially, the Examiner stated that Appellants have made an attempt to dilute the Examiner’s statement that *Ogasawara* disclosed that “each message coming from a wireless telephone 18 is associated with the customer’s telephone number, customer ID or some other unique identifier” by stating instead that the wireless phone number is “associated with some type of customer phone number . . .” The relevant section of Appellants response dated July 26, 2005 is contained here:

Further, the telephone number is associated with the customer and not with the input device, per se. Applicants believe that it is well known that a telephone number can be associated with any device and this can be changed. The telephone number is associated with the user and that is the purpose for it. Therefore, in Col. 10, lines 44-46, the terminology “the customer’s telephone number, the customer ID or some other unique identification” refers to identifying the users as opposed to identifying the device.<sup>89</sup>

And the relevant Col 10, lines 13-32 are contained here:

More particularly, the telephone interface of the store server 10 or remote server 26 facilitates receipt of the telephone call from the customer and downloading to the wireless telephone 18. The server personal shopping application facilitates sending and receiving of information between the customer’s wireless telephone 18 and the store server 10 or remote server 26. *When the store server 10 or remote server 26 is called by the customer’s wireless telephone 18, then the telephone interface obtains the customer’s phone number and then searches the customer information database in the store server 10 or remote server 26 in order to obtain the following information: customer’s telephone number, download program ID, customer ID, and customer name. This information is preferably stored in the store server 10 or remote server 26 when the customer enrolls in the personal shopping application. In this manner, the customer’s telephone number provides a degree of validation, and thus servers to*

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<sup>88</sup> See Final Office Action dated May 18, 2006, pages 3 & 4.

<sup>89</sup> See Response dated July 26, 2005, page 5, first paragraph

*indicate that the customer is authorized to make purchases.*<sup>90</sup>  
[emphasis added].

The Examiner has identified a particular element in the prior art, that being the limitation of a unique ID tied to the device. *Kahn* stated that “a mere identification in the prior art of each element is insufficient to defeat the patentability of the combined subject matter as a whole.”<sup>91</sup> Rather than concentrate on this element, the Examiner is required to articulate the basis on which the Examiner concludes that it would have been obvious to make the claimed invention, i.e., why one of ordinary skill in the art would have been motivated to select the references and to combine them in order to render the claimed invention obvious. The Examiner’s indication that a unique ID exists does not show the existence of such teaching. Thus, Appellants believe that the Examiner has not met a *prima facie* case by stating, “regardless of what the phone is being used for by the system in *Ogasawara*, the phone number still answers the limitation of a unique ID tied to the device 18.”<sup>92</sup>

Furthermore, in the Final Office Action dated May 18, 2006, the Examiner stated that “the unique ID tied to the phone, wherein the phone is independent of any location” is all that the Examiner is relying on for in the *Ogasawara* reference in Claim 22.”<sup>93</sup> However, *Ogasawara* contains no teaching or motivation to provide “a unique value (the scanned item) associated with the unique device ID.” Due to the fact that after initial connection, the telephone number is no longer used, reliance on this one particular aspect is insufficient to show any motivation, suggestion or teaching that would lead one skilled in the art at the time of the invention to combine the teachings of *Ogasawara* with *Hudetz* to allow one with the teaching of *Hudetz* in front of them to incorporate a scanner with a unique ID therein.

### **c. Discussion of *Simonoff* – TSM Test.**

The Examiner further stated that *Hudetz* fails to disclose the unique ID as being associated with the message packet. The Examiner is relying upon the *Simonoff* reference for

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<sup>90</sup> See *Ogasawara*, column 10, lines 13-32.

<sup>91</sup> *Kahn*, 441 F.3d at 986.

<sup>92</sup> See Final Office Action dated May 18, 2006, pages 3-4.

<sup>93</sup> See Final Office Action dated May 18, 2006 on page 4.

such disclosure, citing the disclosure in column 11, lines 13-68 therein. That disclosure is set forth as follows:

After the Universal Client device on the client host 300 establishes the Transmission Control Protocol/Internet Protocol (TCP/IP) socket connection, the host server 100 immediately responds, in an exemplary case, to the Universal Client device with the characters "(Client:you\_are\_id\_number)," where id\_number is a unique 8-digit interger, during step 4. It will be appreciated that a computer generated server host socket hashcode value is generally recommended for id\_number, since it is guaranteed to be unique and since it identifies the logical socket connection between the server host 100 and the client host 300 running the Universal Client device. It should be mentioned that the server host 100 advantageously can selectively send GUI-Script to multiple client hosts 300a-300r, as shown in FIG. 2 by filtering the ID\_number.

It should be mentioned at this point that any number of the multiple client hosts 300a-300r can be interactively connected to one another either by LAN 400 alone of [sic] through server 100 via LAN 400. Thus, client hosts 300a and 300b can be directly connected to one another so that the users can communicate with one another. FIGS. 7 and 8, which are discussed in great detail below, illustrate an exemplary chat room which can be established between two or more users. It should also be mentioned that a single client host 300a advantageously can be connected to, for example, multiple application hosts 200a-200m so that the GUI displayed using the Universal Client device includes data generated by several different application hosts 200a-200m. Of course, when referring to combat system applications, several client hosts 300a-300r preferably display the data generated by the application hosts 200a-200m, although each of the client hosts 300a-300r may display received information filtered through a unique GUI.

It will be appreciated that the purpose of the "Client:you\_are" message is to provide the Universal Client device with a unique identifier such that the server host 100 can distinguish which of the client hosts 300a-300r is sending GUIScript transmissions and positively identify which one of the client hosts 300a-300r will receive a GUIScript message from server host 100 via LAN 400. From this point on, any data sent from the Universal Client device will be appended with the client id\_number. Once the Universal Client device has the client id\_number, the next communication



may be initiated by either the Universal Client device on the client host 100 or the server host 300. Each communication advantageously can be in the form of GUIScript, although the present invention is not limited Universal Client device which are responsive to GUIScript messages. It should be mentioned that the Universal Client device advantageously can respond to other stimuli such as an ASCII character string and datagram.

The Universal Client device beneficially can be made interactive to a character string by employing, for example, a so-called “wait-for” command which causes the Universal Client device to respond in a predetermined way when a character string having a specified format is received. Thus,<sup>94</sup>

Appellants set forth arguendo, that this portion of the disclosure sets forth that the universal client be disposed on the network and be placed in communication with the host server.<sup>95</sup> The host server then assigns an ID number to the universal client device to be able to distinguish between universal client devices on a network. The assigned ID is not permanently affixed to the universal client device, and does not correspond to a unique ID that is disposed in permanent association with the input device. An ID that is associated during communication between a universal client device and a server is for the purpose of providing a source address, and is standard.

Further, *Simonoff* does not provide a teaching or motivation to combine the ID with information of a separately scanned item to associate the combination of the unique ID and scanned code to a second destination location on the network. According to Claim 22, the unique ID is the ID of the scanning device, and not the address of the destination device for the purpose of matching to connect to a location having an association with the combination of the scan code and the ID.

The only purpose for the ID in *Simonoff* is to provide a particular node on a network for the purpose of generating a communication path. *Hudetz*, with TCP/IP communication, already has such a source address. As such, one skilled in the art would not look to *Simonoff* for such a teaching. Claim 22 contains no use of a source address such as that disclosed in *Simonoff*, and,

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<sup>94</sup> See *Simonoff*, column 11, lines 13-68.

<sup>95</sup> See Response dated November 20, 2006, page 22, paragraph 31.

therefore, *Simonoff* contains no teaching, suggestion or motivation that would lead one skilled in the art at the time the invention was made to utilize this particular source address ID for the purpose of a matching operation utilizing a totally separate ID. These IDs are for diametrically opposite purposes and, therefore, Appellants believe that the combination of *Simonoff* and *Hudetz* is improper.

## **5. Conclusion – TSM Test.**

*Hudetz* provides a system that repurposes a standardized product code (e.g., a UPC) and associates it with a URL based on a database on the network. The UPC code is entered by scanning, manual input or voice input. The UPC is transmitted to a server, which performs a matching operation, and which returns an HTML document that displays a list of the stored URLs that are associated with the UPC code. The user selects a URL from the list to display on the user PC display. As multiple methods of input are available, *Hudetz* contains no predisposition to have a unique device ID because multiple input methods are available to the user. As such, there is no suggestion or teaching in *Hudetz* that an input device could have affixed thereto a unique device ID that could be used in combination with a unique value (scanned UPC) to a predetermined association to a second location on a network. Furthermore, *Hudetz* is a system for enabling easier input of a URL address associated with a particular product or manufacturer, and would not benefit from appending the UPC code with a unique ID from the input device.

*Ogasawara* provides a portable scanner attached to a wireless telephone for the purpose of scanning articles or services, transmitting the scanned information to a server, and returning information about the scanned articles or services. The telephone number disclosed in *Ogasawara* is only used to access the user profile and validate the user. One skilled in the art would recognize that a telephone number is not permanently affixed to the wireless telephone, nor is the telephone number used in combination with the scanned value for any purpose. Furthermore, *Ogasawara* has no teaching that would indicate that a unique ID that is permanently affixed to the input device would be used, especially due to the fact that the telephone number used can be transferred from one input device to another input device.

Finally, *Simonoff* provides a network ID that is assigned by a host server to a universal client device. The ID is non-permanent and is utilized to identify a source address when querying the server.

Therefore, no reason, motivation or suggestion exists to combine *Hudetz*, which actually teaches away from the need for a fixed scanner ID, with *Ogasawara* and *Simonoff*. *Simonoff* has no need to provide a unique address for a message packet in the system of *Hudetz*, as the *Hudetz* system, with TCP/IP communication, already uses such a source ID. Additionally, *Ogasawara* has no need to provide a unique device ID, permanently affixed to the input device, since the device ID in *Ogasawara* is neither permanent nor is it used in association with the scanned information. Appellants submit that there is no teaching, motivation or suggestion that would in lead one skilled in the art to combine these references.

Furthermore, the Examiner has provided no reference that would illustrate a second location on a network that has a predetermined association with a combination of a unique value and a unique device ID, wherein the association between the unique value and the unique input device ID associates the second location with both the unique device ID and unique value. None of the references provided have a teaching that the second location has a predetermined association with the combination of the unique value and the unique ID of the device. As such, Appellants submit that not only is a unique ID that is associated with a message packet missing; but so is the combination of a unique input ID and the unique value, which are both sent to a relational database and the relational database is operable to store an association between the two. This association allows the connection of the first location to the second location. For example, if a UPC code were scanned by one input device, it would connect to one location, and if another input device scanned the same UPC, it would be routed to a different location. The combination of the two unique device IDs, the UPC code and the permanently affixed code provide an overall unique code. The Examiner has done nothing more than to provide *Ogasawara* for the purpose a unique input device ID in association with the input device and *Simonoff* for the purpose of the combination of an ID and a message. None of the cited references, taken singularly or in combination, show a second location that has an association with the combination of the input device ID and the scan code in the message packet. As such,

even if the combination of *Ogasawara*, *Hudetz*, and *Simonoff* were proper, which Appellants believe they are not, that combination fails to disclose the whole invention as set forth in Claim 22.

Based upon the TSM test, the Examiner's position is conclusory. The Examiner states that the combination of *Hudetz*, *Ogasawara* and *Simonoff* would provide a scanner or input device that has a unique ID, permanently affixed thereto that is independent of any location; transmitting a message packet containing a combination of the unique device ID and a unique value such that the combination is in association with a predetermined second location. However, the Examiner has provided no articulated reasoning why one skilled in the art would use a telephone number or network address as a unique ID permanently affixed to an input device. Additionally, the Examiner has failed to provide a reference that would illustrate a second location on a network that has a predetermined association with the combination of the unique ID and the unique value.

#### **6. KSR Test:**

The recent *KSR* case, although not fully analyzed as to its impact on obviousness type rejections under 35 U.S.C. § 103, indicates that the test is "if a person of ordinary skill can not implement a *predictable variation*, §103 likely bars it's patentability."<sup>96</sup> Under this dictum, the question would be whether *Hudetz* could be varied in a predictable manner to utilize a telephone number currently assigned to a wireless telephone and a device with an assigned network ID. *Hudetz* would have no benefit from a unique ID permanently associated to the input device, which unique ID would be only associated with input device and would do nothing more than identify the source of the entered product information. In Claim 22, the purpose of the combined unique value (scanned code) and unique ID is to provide an additional filtering mechanism for the manufactures to further regulate the information returned to the user. If the telephone number were used in the *Hudetz* system, there is no indication that if the number were to be sent in association with the unique value in a message packet, that the combination would have a predetermined association with a second location on the network. As such, there is no

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<sup>96</sup> *KSR*, 127 S. Ct. at page 1740.

predictable variation of *Hudetz* that would lead one skilled in the art to utilize the *Ogasawara* wireless telephone number and the *Simonoff* universal client device ID. As such, when work is available in one field of endeavor, i.e., utilizing a unique device ID, permanently associated with the input device, to access a list of URLs on the web, there is no design incentive or other market force that would prompt a variation (a predictable variation) of the *Hudetz* reference, which actually teaches utilizing multiple input devices to achieve the purpose of the invention, to utilize a unique device ID for a purpose that is not useful or envisioned in *Hudetz*. In summary, Appellants submit that the Examiner has failed to provide a *prima facie* case as to why the *Hudetz*, *Ogasawara* and *Simonoff* references, in combination, obviate Appellants' present inventive concept, as defined by claims 22-27.

**D. Dependent Claims 23-27 as rejected by the combination of Hudetz, Ogasawara, and Simonoff.**

Claims 23-25 depend from, and further limit Claim 22, while Claims 26 and 27 depend from, and further limit Claim 23. These dependent claims are allowable for at least the same reasons as the claims from which they depend, as discussed above.

### **VIII. Conclusion**

In Summary, Appellants submit that only one of the references cited by the Examiner satisfies the analogous art requirement. Further, all three of the references fail to provide a suggestion, motivation, or teaching for the various combinations because the text fails to illustrate “why” one skilled in the art would combine the references in the particular manner required to provide a predictable variation. Instead, the Examiner simply identifies particular components for each reference, combines them in a specific manner required by Appellants’ claimed invention, and then states that it would be obvious to one skilled in the art to do so. This is clearly hindsight based reasoning that contravenes the standards imposed by both the MPEP and the Federal Circuit, and Appellants respectfully submit that the cited combinations are improper for reasons detailed above and requests that the rejections under § 103 be withdrawn.

Respectfully submitted,

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## CLAIMS APPENDIX

### Claim 1-21: (Canceled)

Claim 22: A method for interconnecting a first location on a global communication network with a second location thereon, comprising the steps of:

providing an input device coupled to the first location on the global communication network, the input device having associated therewith a unique input device ID that is permanently associated with the input device and independent of the first location;

scanning a product code disposed on a product with the input device, which product code is representative of the product in commercial transactions, the step of scanning operable to extract the information contained in the product code to provide a unique value as an output;

associating the unique value with the unique input device ID in a message packet, such that the unique input device ID is associated with the message packet for transmission over the network and wherein the second location has a predetermined association with the combination of the unique value and the unique input device ID, such predetermined association associates the second location with both the unique device ID and the unique value; and

in response to the step of scanning and the step of associating, connecting the first location to the second location.

Claim 23: The method of Claim 22, wherein the step of connecting to the second location comprises:

in response to the step of scanning and the step of associating, accessing a database having stored therein a plurality of unique values for a plurality of products, each associated with routing information over the global communication network to one of the plurality of second locations;

comparing the output unique value with the stored unique values in the database; and

if a match exists between the output unique value and any of the stored unique values: retrieving from the database the associated routing information to the second location, and connecting the first location to the second location on the global communication network in accordance with the retrieved routing information.

Claim 24: The method of Claim 22, wherein the unique value comprises a binary value.

Claim 25: The method of Claim 22, wherein the product code comprises a universal product code (UPC) as associated with a product indicating information regarding the product for use in commercial transactions associated with that product.

Claim 26: The method of Claim 23, wherein the step of accessing the database comprises the steps of:

- accessing a remote location on the global communication network at an intermediate node thereon;

- forwarding the unique value and unique device ID to the intermediate node;

- wherein the database is disposed at the intermediate node; and

- retrieving the associated routing information from the database in the event of a positive match and forwarding the retrieved routing information back to the first location and connecting the first location to the second location in accordance with the retrieved information.



Claim 27: The Method of Claim 23, wherein the second location represents product information associated with the product.

## EVIDENCE APPENDIX

A. U.S. Patent No. 5,978,773 to Hudetz et al. (“Hudetz”) found on pages 2 and 3 of the Office Action (dated December 6, 2001), found on pages 2 and 3 of the Final Office Action (dated May 23, 2002), found on pages 2 and 3 of the Office Action (dated June 13, 2003), found on pages 2, 3 and 4 of the Final Office Action (dated December 23, 2003), found on pages 2 and 3 of the Office Action (dated September 7, 2004), found on pages 2, 3 and 4 of the Final Office Action (dated February 28, 2005), and found on pages 2, 3 and 4 of the Final Office Action (dated May 18, 2006).

B. U.S. Patent No. 6,577,861 to Ogasawara (“Ogasawara”) found on pages 2, 3 and 4 of the Final Office Action (dated December 23, 2003), found on pages 2 and 3 of the Office Action (dated September 7, 2004), found on pages 2, 3 and 4 of the Final Office Action (dated February 28, 2005), and found on pages 2, 3 and 4 of the Final Office Action (dated May 18, 2006).

C. U.S. Patent No. 6,078,321 to Simonoff et al (“Simonoff”) found on pages 2 and 3 of the Office Action (dated September 7, 2004), found on pages 2 and 3 of the Final Office Action (dated February 28, 2005), and found on pages 2 and 3 of the Final Office Action (dated May 18, 2006).

D. U.S. Patent No. 6,220,509 to Byford (“Byford”) found on pages 2 and 3 of the Final Office Action (dated May 23, 2002), and found on page 3 of the Office Action (dated June 13, 2003).

E. Non-Entered Amendment After Final dated November 20, 2006.



US005978773A

**United States Patent**

[19]

[11] **Patent Number:****5,978,773****Hudetz et al.**[45] **Date of Patent:****\*Nov. 2, 1999**

[54] **SYSTEM AND METHOD FOR USING AN ORDINARY ARTICLE OF COMMERCE TO ACCESS A REMOTE COMPUTER**

[75] Inventors: **Frank C. Hudetz**, Lisle; **Peter R. Hudetz**, Plainfield, both of Ill.

[73] Assignee: **NeoMedia Technologies, Inc.**, Fort Myers, Fla.

[\*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

[21] Appl. No.: **08/538,365**

[22] Filed: **Oct. 3, 1995**

**Related U.S. Application Data**

[60] Provisional application No. 60/000,442, Jun. 20, 1995.

[51] **Int. CL.** **G06F 3/06; G06F 13/20**

[52] **U.S. CL.** **705/23; 709/219; 707/523**

[58] **Field of Search** 395/800, 200.1, 395/201, 829, 200.03, 114, 117, 200.57, 200.61, 200.33; 358/440; 235/383, 380, 375, 462, 385, 432, 466; 364/464.18, DIG. 1, DIG. 2; 382/313, 317; 705/14, 23; 709/219, 217, 220; 707/523

**References Cited****U.S. PATENT DOCUMENTS**

4,365,148 12/1982 Whitney ..... 235/383  
4,833,308 5/1989 Humble ..... 235/383  
4,901,073 2/1990 Kibrick ..... 341/13  
4,959,530 9/1990 O'Connor ..... 235/383  
5,038,023 8/1990 Saliga ..... 235/385  
5,111,391 5/1992 Fields et al. .... 364/401  
5,115,326 5/1992 Burgess et al. .... 358/440  
5,198,644 3/1993 Pfeiffer et al. .... 235/383  
5,268,976 2/1994 Citron et al. .... 235/375  
5,296,688 3/1994 Hamilton et al. .... 235/375  
5,304,786 4/1994 Pavlidis et al. .... 235/462  
5,324,922 6/1994 Roberts ..... 235/375

5,331,547 7/1994 Laszlo ..... 364/413  
5,340,966 8/1994 Morimoto ..... 235/376  
5,362,948 11/1994 Morimoto ..... 235/376  
5,382,779 1/1995 Gupta ..... 235/383  
5,386,298 1/1995 Bronnenberg et al. .... 358/403  
5,398,336 3/1995 Tinty et al. .... 395/600  
5,405,232 4/1995 Lloyd et al. .... 414/280  
5,418,713 5/1995 Allen ..... 364/403

(List continued on next page.)

**FOREIGN PATENT DOCUMENTS**

0 744 856 A2 11/1996 European Pat. Off. .  
0 837 406 A2 4/1998 European Pat. Off. .  
WO 98/03923 1/1998 WIPO .  
WO 98/06055 2/1998 WIPO .  
WO 98/19259 5/1998 WIPO .  
WO 98/24036 6/1998 WIPO .  
WO 98/24050 6/1998 WIPO .  
WO 98/40823 9/1998 WIPO .  
WO 98/49813 11/1998 WIPO .

**OTHER PUBLICATIONS**

Information Entrepreneur, Aug. 1995, pp. 14-15, "A Database on Paper".

H. Burke Handbook of Bar Coding Systems, (Van Nostrand Reinhold Co. Inc. 1984), pp. 1-17, 26-38.

W. Erdei, Bar Codes (McGraw Hill, Inc. 1993), pp. 1-28.

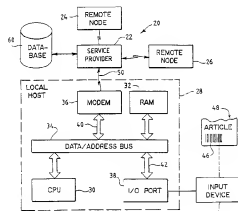
Primary Examiner—Daniel H. Pan

Attorney, Agent, or Firm—Anthony R. Barkume, P.C.

[57]

**ABSTRACT**

A system and method for using identification codes found on ordinary articles of commerce to access remote computers on a network. In accordance with one embodiment of the invention, a computer is provided having a database that relates Uniform Product Code ("UPC") numbers to Internet network addresses (or "URLs"). To access an Internet resource relating to a particular product, a user enters the product's UPC symbol manually, by swiping a bar code reader over the UPC symbol, or via other suitable input means. The database retrieves the URL corresponding to the UPC code. This location information is then used to access the desired resource.

**41 Claims, 5 Drawing Sheets**

## U.S. PATENT DOCUMENTS

5,420,403	5/1995	Allom et al.	235/375	5,710,887	1/1998	Chelliah et al.	395/226
5,420,943	5/1995	Mak	382/313	5,745,681	4/1998	Levine et al.	705/27
5,519,878	5/1996	Dolin, Jr.	395/829	5,757,917	5/1998	Rose et al.	380/25
5,530,852	6/1996	Meske et al.	395/200.03	5,764,906	6/1998	Edelstein et al.	395/200
5,602,377	2/1997	Beller et al.	235/462	5,765,176	6/1998	Bloomberg	707/514
5,640,193	6/1997	Wellaer	348/7	5,778,367	7/1998	Wesinger, Jr. et al.	707/10
5,649,186	7/1997	Ferguson	395/610	5,791,991	8/1998	Small	463/41
5,671,282	9/1997	Wolff et al.	380/25	5,804,803	9/1998	Cragun	235/402
				5,815,776	9/1998	Gifford	395/200.47

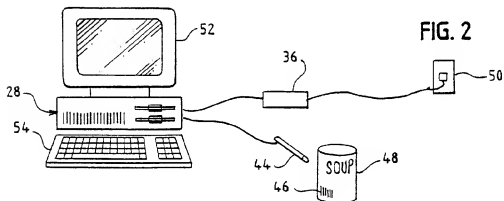
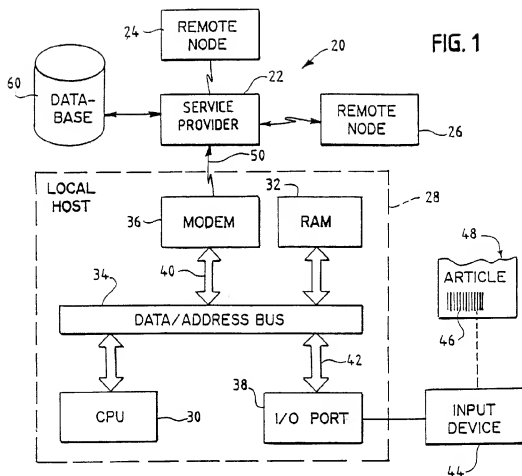


FIG. 3

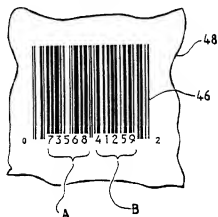


FIG. 5

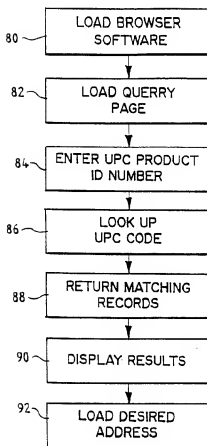


FIG. 4

UPC-A	UPC-B	URL	DESC
31251	00301	sample.soup.com/subfile/Index.html	soup
31251	00302	sample.soup.com/promotion/main.html	giveaway
31251	00400	test.milk.org	milk
4205		cars.com/testdrive/main.html	cars

FIG. 6

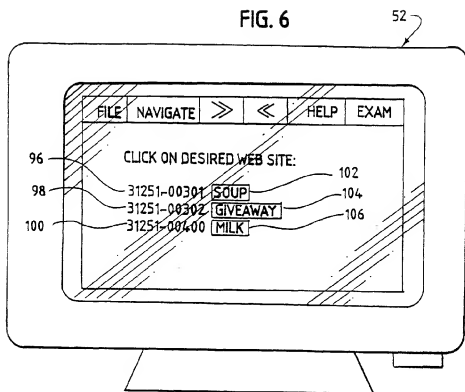
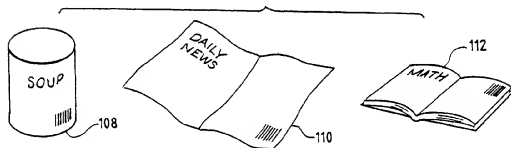


FIG. 7



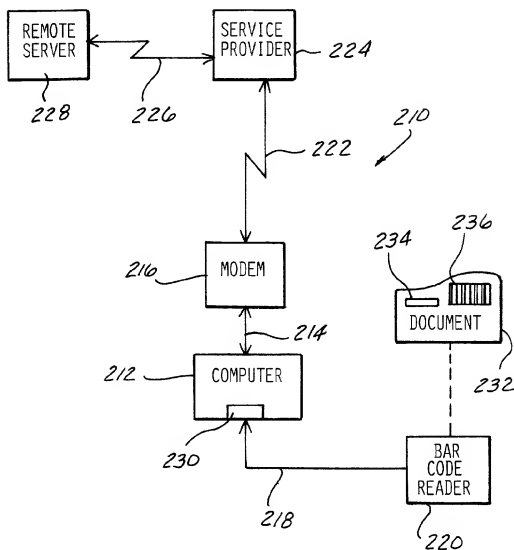


FIG. 8



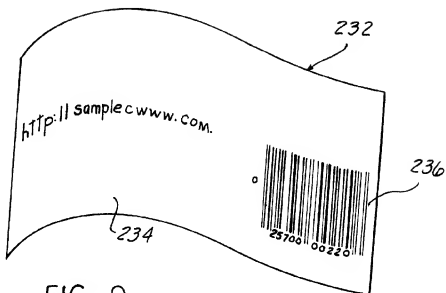


FIG. 9

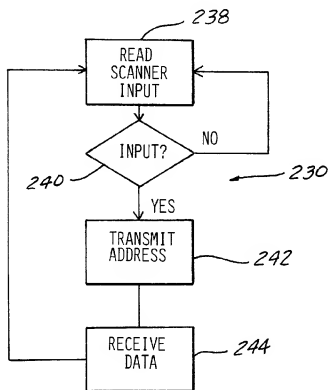


FIG. 10

# SYSTEM AND METHOD FOR USING AN ORDINARY ARTICLE OF COMMERCE TO ACCESS A REMOTE COMPUTER

## RELATED APPLICATION DATA

A claim of priority is made in this application based on Provisional Application Ser. No. 60/000,442, filed on Jun. 20, 1995, and entitled "Method and Apparatus for Interfacing with Remote Computers" (hereinafter, "our copending application"), the disclosure of which is hereby incorporated by reference in its entirety.

## FIELD OF THE INVENTION

This invention relates to computer communications generally, and more specifically to techniques for giving users convenient access to information located on computer networks such as the Internet.

## BACKGROUND OF THE INVENTION

A computer network is a set of computers (or "hosts") which are able to communicate electronically. In logical terms, the network can be viewed as a set of nodes or "sites", with each computer on the network being home for one or more nodes. Generally speaking, each host is assigned a numeric address, which the network uses to route information to that particular host. To facilitate human use of networks, addresses are often given alphanumeric codes (or "mnemonics"), which are easier for people to remember. For example, the numeric address 200.98.322.56 may be assigned the mnemonic "sample.com."

At the present time, the world's most important network is the Internet. The Internet is a massive worldwide collection of computer resources, connected together in network fashion by a series of communication protocols known as TCP/IP. Many sites on the Internet can be accessed in accordance with popular standard protocols or formats such as Gopher and Hypertext Transport Protocol ("HTTP"). These sites act as remote servers, providing information to users' computers (or "clients") in accordance with a particular format or protocol. The client system (often an individual's personal computer) must have the necessary software to handle the server's particular protocol.

For example, sites set up in accordance with HTTP are nicknamed "Web sites". If a user wants to access Web sites, she must have a computer connected to the Internet and equipped with software for communicating in accordance with the HTTP protocol. Such software is often called a "browser", because it allows users to browse (or, in the parlance of the enthusiasts, "surf") from Web site to Web site, much the way one might browse through a library. This process is facilitated by the fact that most Web sites have hypertext links to other Web sites, which the user can activate by clicking a mouse on a highlighted portion of the screen.

Typical browser software also maintains a list of sites the user has visited, which the user can recall using commands such as "back" and "forward." These commands, coupled with the hypertext links between Web sites, give users the sensation of "navigating" through a seemingly infinite realm of information, which is popularly referred to as "cyberspace" or the "World Wide Web."

Users can also specify a Web site by manually typing in the site's location as a Uniform Resource Locator ("URL"). The URL specifies the precise location of a particular resource, and has three fields:

<resource type> <domain name> <path>  
Domain name, as explained above, is the alphanumeric network address of the host on which a particular resource resides. The "path" is the specific directory and file on the host where a resource is stored. A typical URL is <http://bongo.cc.utexas.edu/~neural/cwsapps.html>.

For example, the command "Go <URL>" would cause browser software to request the information residing at the site specified by the URL. This is called "pointing" the browser to the desired Web site. The Web server at the designated URL processes the browser's request by transferring a copy of the file specified by the URL to the user's local host computer. The transferred file includes embedded commands in the hypertext markup language ("HTML"), which cause the client's browser software to display and handle the transferred file in a desired manner.

Cyberspace is not limited to the World Wide Web or the Internet. Massive amounts of information are also available on networks maintained by on-line service providers under the service marks CompuServe, Prodigy and America Online, for example. Users typically access these on-line services via telephone modem connection. To the end user, these networks appear to be a series of sites or locations or "rooms" offering various types of information. The addresses for these locations are assigned by the on-line service providers. Navigation among these locations is handled by proprietary client software, which runs on the user's personal computer.

Many users learn of resources on the Internet or a proprietary on-line service through magazine articles and advertisements. These articles and advertisements include the necessary URL or other network address to access the desired site. Many publications compile lists of sites they deem particularly worthwhile. When a user sees a listing for a site which looks interesting, he can manually enter the published URL or other mnemonic address into his browser or other software, and access the site.

As explained in our copending application, we realized that published computer addresses—whether URLs or otherwise—were difficult for people to use because they have to be tediously entered into their computers. A good example of an address which may be difficult to enter is the University of Texas address cited above. The problem is particularly acute for persons with a visual or physical disability.

Another problem using the Internet, we realized, is that many users have trouble even finding URLs or other network addresses for desired sites such as Web pages. Accordingly, Web site sponsors publish their Web site URLs in print advertising and on packaging. The difficulty with this approach however is that the URLs are still long, and cumbersome to remember and enter into a computer.

In our copending application, we proposed to resolve these problems by allowing people to access published locations without having to manually enter the published addresses. In accordance with one embodiment of the invention, disclosed in our court pending application the mnemonic address or verbal description of a network location is published along with the location's numeric address in bar code format. The user's computer is equipped with a bar code reader and browser software. The bar code reader is suitably interfaced to the computer's browser software to allow bar code input to be accepted as address information. When the user sees an interesting published address, he scans the associated bar code using the bar code reader, thereby loading the desired numeric address into the browser. The browser then accesses the Web or other site corresponding to that numeric address.

We are finding several problems with this and other approaches that have been tried. First, some URLs and other network addresses contain upwards of 20-30 characters, and therefore require very long bar code symbols, which can clutter advertising and packages, and may not be practical from either an esthetic or technical perspective. Second, placing URLs on printed material (whether or not in bar code format) requires manufacturers to redesign products, packaging and/or advertisements, and many manufacturers may be reluctant to do this. Third, previous proposal, if the network address is changed, the package needs to be redesigned, and packages already in the marketplace will have incorrect address information.

#### SUMMARY OF THE INVENTION

The present invention offers a better way for consumers and others to access resources on remote computers, particularly Web sites. In accordance with one aspect of the invention, the dissemination and entry of network addresses is accomplished by means of existing identification standards (e.g., bar codes) found on ordinary products like soup or soda, in conjunction with a centralized database of network locations.

One embodiment of the invention is a system in which a bar code or other indicia is associated with a product or other article of commerce. The indicia encodes (in human and/or machine readable form) a UPC or other identification number, which is associated with the article in accordance with an extrinsic standard. A computer database is provided that relates standard UPC codes to Internet URLs or other network addresses. To access a network resource relating to a particular product, the user swipes a bar code reader across the product's UPC symbol. The database then retrieves the URL corresponding to the UPC product data. This location information is then used to access the desired resource on the network.

In accordance with another aspect of the invention, network addresses are directly encoded into bar code format. In this manner, the necessity of manually entering the address is eliminated. Users can more quickly review published lists of Web Sites or other locations. The bar coded address can also be printed on removable stickers or detachable cards, allowing users to readily clip the stickers or cards for future reference.

In accordance with yet another aspect of the invention, navigational commands (in addition to net addresses) can be published together in both human-readable and bar code formats. These commands include common commands such as "back" and "forward," as well as more specialized command sequences, such as the commands necessary to access particular services, files, and documents on the Internet or the proprietary on-line services. Rather than manually enter these commands, the user selects a desired command by scanning its associated bar code. The output of the bar code reader is accepted by the browser software as the selected command.

The invention offers a number of important advantages. First, because product identification information is already widely disseminated using standardized and pre-assigned codes, the invention eliminates the need for separately disseminating domain names or other network location data. Further, the invention can be implemented without requiring manufacturers to redesign packaging or other articles, or to develop special bar code indicia. This overcomes a Catch-22 often facing new technologies: manufacturers will not participate until there is widespread consumer interest; con-

sumers are not interested until there is widespread manufacturer participation. With the invention, mass participation by manufacturers in the technology is automatic.

Second, the invention allows practical use of bar codes and other machine readable media for entry of network location data. As we realized, encoding URL data in bar code format is not practical because the resulting bar codes are too long. By using existing UPC product codes in combination with the database of network locations, users have the benefit of bar code or comparable technology for entering network location data. Thus, the necessity of manually entering the address is eliminated. Users can access a desired site by simply using a bar code reader. The UPC can also be printed on removable stickers or detachable cards, allowing users to readily clip the stickers and cards for future reference. This is particularly useful when the user reads about the location at a time when he does not have access to a computer.

Third, the invention overcomes the problems encountered when network addresses are changed. Network addresses can change as companies reorganize their on-line marketing strategies. Also, Internet addresses are assigned by an independent third party—InterNIC—which may in some cases have the authority to unilaterally change a company's address. Finally, unforeseen trademark conflicts (involving for example Internet domain names) may require adoption of new addresses. With the invention, a new address assignment requires only that the database of addresses be updated. Products, packaging, advertisements and the like bearing the standard identification codes need not be redesigned.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a computerized system for interfacing with a computer network in accordance with the invention.

FIG. 2 is a perspective view of the local host computer shown in FIG. 1.

FIG. 3 is an enlarged view of the article of commerce shown in FIG. 1, illustrating in detail the UPC symbol thereupon.

FIG. 4 is a tabular view of the database shown in FIG. 1.

FIG. 5 is a flow chart illustrating the operation of the system of FIG. 1 in accordance with the invention.

FIG. 6 is an idealized view of the CRT screen of the client system of FIG. 1 displaying information in accordance with the invention.

FIG. 7 is a perspective view of articles of commerce which can be used in accordance with the invention to access remote computers.

FIG. 8 is a block diagram of a computerized apparatus for interfacing with a computer network in accordance with a second embodiment of the invention.

FIG. 9 is an idealized perspective of the document of FIG. 8 having a network address in both bar code and human readable formats.

FIG. 10 is a flow chart illustrating the operation of the apparatus of FIG. 8 in accordance with the invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

##### 1. Overview

FIG. 1 is a block diagram illustrating one application of the invention, namely the use of an ordinary article of commerce to access sites on the Internet's World Wide Web. As explained below, this embodiment of the invention

allows a person who desires Internet resources concerning a particular product to access those resources using the product's UPC symbol. The data encoded on the UPC symbol can be entered manually or (for greater convenience) using a bar code reader.

Referring to FIG. 1, the Internet 20, illustrated here in generalized format, includes a service provider 22 and two remote nodes 24 and 26. In this case, service provider 22 is a local Internet access provider. Service provider could also be an online service provider, such as America OnLine®, Compuserve®, Microsoft® Network and Prodigy®. In such cases, local host 28 need not be on Internet 20—that is, need not have a network address.

An end-user (not shown) accesses Internet 20 using local host 28, which in this case is an IBM compatible personal computer including a CPU 30, a random access memory 32 and an address/data bus 34 by operatively connecting CPU 30 and memory 32. Unless otherwise specified, the term "memory" herein includes any storage device, including RAM, ROM, tape or disk drives (or collections or networks of tape or disk drives), and any other device for storing information. A modem 36 and I/O port 38 are attached to bus 34 by a suitable interfaces 40 and 42, respectively. An input device 44 is connected to bus 34 via I/O port 38. Input device 44 is a commercially available wand-style bar code reader reads a Uniform Product Code ("UPC") bar code symbol 46 affixed to an article of commerce 48. Alternatively, input device 44 could be a card reader, optical character or voice recognition system, touch screen, scanner, pen, keyboard or other known input device.

Local host computer 28 need not be a personal computer, and could for example be a mainframe or minicomputer having a terminal by which the user could enter and receive data. In that arrangement, input device 44 would be attached to the terminal.

Modem 36 is adopted for electronic communication via a suitable telephone link 50 with service provider 22. Computer 28 functions as an Internet host because it is connected to service provider 22 using Point to Point Protocol ("PPP") via telephone link 50. Other telecommunications channels may be used, such as ISDN or a connection which incorporates a third party intermediary network such as TymNet™. Alternatively, local host 28 could be connected directly to Internet 20, as is likely to be the case where local host 28 is a larger computer, such as mainframe. FIG. 2 offers a perspective view of local host 28 and article of commerce 48 and also illustrates a CRT monitor 52 and keyboard 54 suitably coupled to bus 34.

In this illustration, local host 28 is used to access Internet resources (or "Web sites") on remote nodes 24 and 26, which are available using the HTTP protocol. HTTP uses a client-server architecture, with remote nodes 24 and 26 acting as servers, and local host 28 acting as a client. Local host is equipped with Netscape Navigator brand Web browser software which enables it to function as an HTTP client.

Remote nodes 24 and 26 have pre-assigned network locations (or "domain names"), and desired resources (such as a particular Web site) are located in specific directories and files (or "paths") resident on a remote nodes 24 and 26. The precise locations of those resources are specified using URL, which, as explained above, includes three fields: <resource type> <domain name> <path>. To access resources of a particular remote node 24 or 26, local host 28 requests those resources from Internet 20 using the appropriate URL. Thus, the URL functions as a more precise kind of network address than a domain name.

The URL required is often supplied by the user. Users learn about the existence of a desired resource (and its

corresponding URL) through a variety of means, including publication in a printed advertisement. In current practice, the URL acquired from a printed source must be entered using a keyboard. As explained above, this can be tedious. Moreover, in many cases, users may have trouble finding references to desired Web pages.

2. Article of Commerce

In accordance with the invention, access to desired resources on remote nodes 24 and 26 is achieved using an article of commerce 48. The term "article of commerce" includes tangible things that are sold or moved through commerce, such as consumer products, packaging, and printed media including books, newspapers, magazines, stickers, fliers, cards, tags and labels. Article 48 bears a standard UPC bar code symbol or indicia 46. Symbol 46 is shown in greater detail in FIG. 3, and may be affixed to article 48 in any suitable manner, including printing directly on the article or its packaging, or applied to labels or tags attached or otherwise affixed to the article. In accordance with UPC standards, symbol 46 encodes a ten-digit number (the "product identification number"). As shown in FIG. 3, the product identification number encoded in UPC symbol 46 consists of two five-digit fields, A and B. Field A is a unique, pre-assigned number signifying a particular manufacturer. Field B is a number identifying one of the manufacturer's products. In the United States, UPC product identification numbers are assigned by the Uniform Code Council, Inc.

UPC symbol 46 provides a machine-readable number that uniquely identifies a particular product and its manufacturer. This is useful at the retail point-of-sale, where purchase of a particular item is recorded by scanning the item's bar code symbol.

There are numerous other formats and systems for assigning product identification numbers to articles of commerce. For example, the International Article Numbering Association ("EAN") assigns its own number to products outside of the U.S. and Canada, and uses a different symbology than used with the UPC. Product identification codes for books are provided by the International Standard Book Numbering System ("ISBN") and are encoded using a symbology specified by that organization. Likewise, magazines and serial publications are assigned product identification codes by the International Standard Serial Numbering System ("ISSN").

These numbering systems share at least three characteristics. First, for purposes of this invention, the identification numbers may be assigned in accordance with an "extrinsic" standard. By extrinsic, it is meant that the assignment of numbers is made by a group or association for the purpose of identifying articles of commerce. It is likely that new types of identification numbers will arise in the future, as will new organizations for assigning and administering those numbers, and the present invention contemplates use of both existing and future extrinsic identification numbers and formats.

Second, the identification numbers may have recognized significance as numbers identifying articles of commerce. The level of recognition may be among the general public, or a defined subset, such as a particular industry or occupation.

Third, the identification numbers may be encoded in a standard, machine readable format—namely, bar codes. Other machine readable formats may also be used for this purpose, including magnetic stripes or optical character recognition ("OCR"), and the present invention could be practiced with product identification numbers encoded in those formats as well.

### 3. URL/UPC Database

In accordance with the invention, service provider 22 includes a relational database 60, which is shown in more detail in FIG. 4. Database 60 includes records 62-68, which are accessible using a suitable database management system software. Each record 62-68 of database 60 contains four fields 70-76. Fields 70 and 72 contain a UPC product identification number, as explained below. Field 74 holds a URL suitable for locating a resource on the Internet. Depending on the application, other network addresses—either numeric or mnemonic, physical or virtual—may be used. Field 76 holds a narrative description of the resource addressed in field 74. This particular arrangement of fields is but one illustration of how the invention may be practiced. For example, additional fields could be provided, or the UPC product identification number could be held in a single field.

Each record 62-68 of database 60 associates a UPC product identification number (contained in fields 70 and 72) with a particular Internet URL and narrative description (contained in fields 74 and 76, respectively). The association is based on selected criteria. In this case, the criteria is the existence of a Web resource sponsored by the manufacturer of the product identified by the UPC number in fields 70 and 72. (If no such resource exists, then the particular product identifier can be omitted from database 60). Other criteria can be used. For example, the association could be based on the existence of a Web site simply referring to or relating to the product.

As stated, fields 70 and 72 contain a UPC product identification number. Field 70 contains the first five digits of the product identification number (field A of FIG. 3). As explained above, these digits uniquely identify the product's manufacturer. Field 72 contains the second five digits of the product identification number (field B of FIG. 3). These digits identify the manufacturer's particular product. In some cases, a manufacturer may have many products and only one Web site or other Internet resource. In that case, field 72 may be left blank, as shown in cell 78 of record 68. When field 72 is left blank, database 60 associates the Web resource indicated in field 74 with any product identification number whose first five digits match the manufacturer number specified in field 70.

Database 60 itself is accessible via service provider 22, which is equipped with Web server software such as provided by Netscape Communications, Inc. The server software provides access to an HTML document (the "Query Page") resident on service provider 22 at a predetermined URL. The Query Page, when displayed on CRT 52 by local host 28 using a forms-capable browser allows the user to enter a query in the form of a UPC product identification number. Alternatively, database 60 could be resident on local host 28 or another remote computer 24 or 26. The Web server at service provider 22 may have a predetermined URL location. Browser software resident in local host computer 28 may be configured to automatically request that predetermined URL location when the browser software is initially loaded.

Database 60 may be incorporated with a database or search engine of Web sites or other Internet resources (such as the Yahoo or Lycos databases). In that case, the Query Page may give the user the option of entering a UPC number or an alternative search term, such as a portion of the URL or the topic to which the desired resource pertains.

Also, database 60 may be divided into one or more tables, which may be distributed over more than one computer. For example, a first table may contain records associating UPC numbers with names of products or manufacturers. A second

table associates products and/or manufacturer names with Internet addresses. Thus, the process of using the UPC number to locate a network address may involve one or more steps. For example, database 60 might determine the name of a product corresponding to a UPC number using a first table, and then determine network addresses corresponding to that product name using a second table. Even though multiple steps are involved, the UPC number is still "associated" in computer memory with the network address for purposes of the invention.

### 4. Operation of the Invention

Suppose a user is interested in Internet resources concerning a particular type of product. In accordance with the invention, the user can access those resources by taking an ordinary specimen of the product—a can of soup for example—and entering all or part of the product's UPC product identification number 46. Database 60 uses the entered product identification number to look-up the associated URL, which is returned to the user in the form of a HTML document.

This operation is illustrated in FIG. 5. At a block 80, the user loads his browser software onto local host computer 28. The browser software is programmed to automatically load the "Query Page" which provides access to database 60. The user in this case is a human, but alternatively a program (or "process") running on local host 28 could be the "user" in the sense that it is the process which is requesting information from the Internet and supplying the UPC number.

At a block 82, the Query Page is transmitted to local host computer 28 in the form of an HTML document. Browser software resident on local host 28 displays the Query Page on CRT screen 52. At block 84, the user (or process) enters the first five or all ten digits of the UPC product identification number encoded by symbol 46. Because the UPC product identification number is printed in both machine- and human-readable format (See FIG. 3), this may be done by manual entry using keyboard, voice recognition system or other input device. More preferably, however, entry is accomplished by scanning UPC symbol 46 affixed to article 48. Input device 44 reads UPC symbol 46, and generates an ASCII character string which is read by CPU 30 via I/O port 38. If the UPC number is scanned, then all 10 digits will generally be entered. The UPC product identification number is transmitted to the Web server resident on local service provider 22, which at a block 86 looks up the entered UPC number in database 60.

At block 88, database 60 retrieves all records 62-68 having UPC fields 70 and 72 that match the product identification number entered by the user. The records are conveyed to the user in the form of an HTML document. The criteria at block 88 for whether UPC fields 70 and 72 "match" the product identification number may be based on a "query by example" approach. For example, suppose at block 84 the user only enters the manufacturer portion (e.g., "31251") of a product identification number. It is assumed in this case that the user is interested in any record 62-68 having a field 70 that matches the entered manufacturer portion. (Recall that the database 60 stores the UPC number in two fields—field 70 for the first five digits (corresponding to manufacturer) and field 72 for the second five digits (corresponding to manufacturer's product)). Thus, at block 88, records 61, 64 and 65 are returned to the user, because field 70 in each of those records contains "31251."

If the user entered all ten digits of a UPC product identification number (e.g., "31251-00302"), then only records whose fields 70 and 72 matched "31251" and "00302," respectively, would be retrieved. (In this case, that

would be record 64. If all ten UPC digits are entered, and no exact match is found, database 60 may be programmed to retrieve records (if any) where at least the manufacturer portion (that is, first five digits) matches field 70.

At block 90, browser software on local host computer 28 displays records retrieved at block 88 on CRT 52. The records are returned in an HTML document, which is displayed by the browser in a screen format 94, as illustrated in FIG. 6. In this example, records 62, 64 and 66 have been retrieved. Screen format 94 displays data from each record in a separate row 96, 98 and 100, respectively. If no matching records are found at block 88, a message such as "no records found" may be returned instead.

Text from description field 76 of each of records 62, 64 and 66 is displayed as hypertext links 102, 104 and 106, respectively. Link 102 is associated with the URL of record 62, link 104 with the URL of record 64, and link 106 with the URL of record 66. When the user selects one of links 102-106 (by mouse click or otherwise), the browser software loads the URL associated with the selected link to access the resource at the location specified by that URL.

#### 5 Alternative Embodiments

The foregoing embodiment is just one example of the present invention. Many alternatives are possible.

Other Networks and Protocols. While the present invention is illustrated with respect to a system for accessing the Internet's World Wide Web, it could be practiced using other Internet protocols (such as Gopher) or other types of wide area networks and systems, including those offered by "on-line service" providers such as America OnLine® of Fairfax, Va., or CompuServe® of Columbus, Ohio or the Microsoft® Network of Redmond, Wash.

In those cases, database 60 could be resident on the on-line service provider's computer. The network address information contained in database 60 could be either Internet URLs, or locations within the on-line service provider's environment. In this case, the protocol used to communicate between local host 28 and service provider 22 need not be HTTP or other Internet protocol. However, service provider 22 can provide a gateway to Internet 20, and access to a desired network location on the Internet can be made using a URL retrieved from database 60.

Controlled Access. Database 60 need not be publicly accessible. Access to database 60 can be limited either by placing database 60 on a proprietary network, or, if placed on an open network, using a password or digital signature system to permit access only to authorized persons. Also, records 62-68 may be selectively accessible. For example, each record can contain an additional field indicating whether the URL contained in field 74 points to network location containing material inappropriate for children. In that case, database 60 can be programmed to return URL at block 88 only if the user has supplied a proper password.

Automatic Jumping to Desired Location. In the disclosed embodiment, the URL associated with a selected UPC product identification code is returned to the end user in an HTML document at block 88 of FIG. 5. The user can then hypertext link to the site corresponding to the URL. Alternatively, instead of displaying query results at step 90 (of FIG. 5), browser software in local host can automatically load the retrieved URL and point the user to the site corresponding to that URL. An additional field in database 60 can provide a code indicating whether this feature should be enabled or disabled for a particular URL.

Identification Numbers and Symbolologies. The invention can be practiced using standard identification numbers and symbolologies other than UPC numbers and formats. For

example, EAN, ISBN and ISSN numbers and formats discussed above could be used.

Articles of Commerce. As shown in FIG. 7, product identification numbers—whether bar coded or otherwise—may be placed all types of items, such as a consumer product 102, newspaper 104 or book 106, as well as coupons, fliers, cards and advertisements (not illustrated). For example, by placing a product's UPC code on an advertisement for the product, the advertiser could, in accordance with the invention, facilitate access to Internet resources concerning the product.

Machine Reading Technology. In lieu of a bar coding, the invention could be practiced with product identification information that is encoded using other technologies. For example, product identification information could be encoded on a magnetic strip affixed to a product, card or other article. In place of wand, local host computer could use a magnetic card reader. Alternatively, the number could simply be printed in human-readable format, and an optional optical character recognition system could be used to facilitate entry.

Direct Coding of Address. In place of a standard UPC symbol, bar code technology could be used to encode the actual mnemonic or numeric (IP) network address in machine-readable format. While this arrangement does not achieve all the advantages of the invention, it allows the user to easily enter desired address information using a bar-code reader instead of manually typing the address.

An example of the direct coding of network addresses is shown in the embodiment illustrated in FIGS. 8-10. Referring to FIG. 8, a block diagram of the computerized apparatus 10 for interfacing with a computer network in accordance with the invention is illustrated. Apparatus 113 includes a computer 114 which may be an IBM compatible personal computer. Attached to computer 114 by a suitable input/output interface 115 is a modem 116. Also attached to computer 114 via an input/output interface 118 is a bar code reader 120. Bar code reader 120 is designed to read conventional bar codes. Bar code technology is described generally in U.S. Pat. No. 5,115,326 issued May 19, 1992 and entitled "Method of Encoding an E-Mail Address in a Fax Message and Routing the Fax Message to a Destination and Network", and U.S. Pat. No. 5,420,943 issued May 30, 1995 and entitled "Universal Computer Input Device," the disclosures of which are hereby incorporated by reference.

Modem 116 is adopted for electronic communication via a suitable telephone link 122 with a service provider 124. Service provider 124 may be an Internet service provider or a proprietary on-line service such as Prodigy or America On-Line. Service provider 124 in turn is electronically connected by a suitable communication link 126 to a remote server 128. For purposes of illustration, we assume that remote server's 128 numeric network address is 200.98.154, and that the assigned address mnemonic is <http://sample/www.com>.

Computer 114 is equipped with communication software for establishing and maintaining a communication link with service provider 124 via modem 116 and telephone link 122. Computer 114 is also equipped with software (see FIG. 10) such as Netscape Navigator brand Web browser software (version 1.0) which enables it to request and receive information from remote server 128 via service provider 124. To operate software 130, a user (not shown) enters an alphanumeric address such as [sample/www.com](http://sample/www.com). Browser software 130 sends service provider 124 a request for the information contained at address corresponding to the mnemonic [sample/www.com](http://sample/www.com). As explained above, that mnemonic address belongs to remote server 128.

Using the address sample@www.com, service provider 124 routes the request to remote server 128 via communication link 126. Remote server 128 responds by sending the desired information via communication link 126 to service provider 124, which relays the information to computer 114 via modem 116 and telephone link 122. Once the information is received by computer 114, browser software 130 displays the information in a useful format for the user.

In accordance with the invention, a document 132 is provided. Document 132 may be magazine article, advertising or other printed matter. As shown in FIG. 9, Document 136 contains human readable information 134 about resources available at a location on a network such as the Internet, including resources provided by remote server 128. In this example, human readable information 134 includes remote server's 128 mnemonic address—http://sample@www.com. A bar code indicia 136 is placed near human readable information 134. Bar code 136 contains remote server's 128 numerical address (200.98.154) in machine readable form.

Alternatively, bar code 136 could contain a machine readable version of the mnemonic address. Under that arrangement, the bar coded digits would correspond to alphanumeric symbols of the mnemonic address. For example, the bar coded number "979" could correspond to the character "a". In that case, however, bar code 136 may have to be exceptionally long.

If the user wants access remote server 128, he or she scans bar code 136 using bar code reader 120. Bar code reader 120 generates a signal on input/output interface 118 corresponding to the numeric address encoded by bar code 136 (which for purposes of illustration we assume to be 25700-00220), as shown in FIG. 9). Browser software 130 on computer 114 reads the numeric address via input/output interface 118, and forwards it to service provider 124, along with a request for information contained at the location corresponding to that address. Service provider 124 determines that the numeric address is that of remote server 128, and routes to there the request for information.

Referring to FIG. 10, the operation of browser software 130 is shown in more detail. In an initial step 138, browser software attempts to read input from bar code reader 120. At a decision block 140, browser software 130 determines whether reader 120 has input. If no input is available, control returns to block 138, where browser software 130 again attempts to read bar code reader 120. If input is available at decision block 140, then control moves to a block 142 where browser software 130 transmits the input read at block 138 to service provider 124. There are other ways to handle input from bar code reader 120, and more sophisticated techniques may be used in actual commercial embodiments of the invention.

Service provider 124 interprets the input as a numeric network address. In this case, we have assumed that the address is that of remote server 128. Service provider forwards a request for data to remote server 128. At a block 144, the requested data contained on remote server 128 is received by browser software 130 via service provider 124. Once received, the data is available for whatever use required by the user. Control then returns to block 138 where the foregoing process is repeated indefinitely.

In effect, the necessity of manually typing in the mnemonic address sample@www.com is eliminated. Instead, the numeric address is obtained from the bar code indicia 136 by use of bar code reader 120. As explained above, bar code 136 could contain the mnemonic as well as numeric address. Browser software could be programmed to accept

either format (mnemonic or numeric) as input from bar code reader 120, with the default expectation being that the bar coded data is a numeric address unless the user otherwise specifies. Alternatively, the first coded number of bar code 136 could indicate whether the information that follows represents a numeric or mnemonic address. If bar code 136 can contain either mnemonic or numeric addresses, then browser software should include a flag or other indication alerting service provider 124 as to the format of the transmitted data.

The foregoing embodiment is just one example. Many alternatives are possible. For example, in lieu of a bar code scanning device, a card reader could be employed. The card reader would read a magnetic stripe affixed to a card or other printed matter. The card would contain human-readable information about a network resource, and the magnetic strip would contain the resource's numeric or mnemonic address in machine-readable format. Alternatively, a RF data collection scanner or CCD scanning system could be used. Bar code symbol 126 could also be associated with specific commands such as "forward", or "back," or command sequences used to access information.

We claim:

1. An apparatus for using an article of commerce to access a remote computer, comprising:

(a) a machine-readable indicia associated with the article of commerce, said indicia encoding at least one of a plurality of identification numbers, said encoded identification number corresponding to the article in accordance with an extrinsic standard;

(b) an input device generating a signal corresponding to said encoded identification number; and

(c) a database containing a plurality of network addresses and said plurality of identification numbers, each of said identification numbers being associated with at least one of said plurality of network addresses; said database being responsive to said signal for providing one of said network addresses which is associated with said encoded identification number;

further comprising a local host adapted for network communication; and a first network containing a plurality of nodes, each having an assigned network address; said network being operatively coupled to said local host for allowing communication between said local host and that one of said nodes whose assigned network address corresponds to the network address provided by said database.

2. The apparatus of claim 1 where said machine-readable indicia is a bar code, and wherein said input device includes a bar code reader.

3. The apparatus of claim 2 where said identification number is at least a portion of a Universal Product Code.

4. The system of claim 2 wherein said identification number is at least a portion of a EAN code.

5. The apparatus of claim 1 wherein said indicia includes human-readable elements, and wherein said input device includes a keyboard for manually entering said identification number.

6. The apparatus of claim 1 wherein said local host is a multi-user computer with a plurality of user terminals.

7. The apparatus of claim 1 wherein said local host is a single-user computer.

8. The apparatus of claim 1 further comprising a server, wherein said local host computer is remotely connected to said server and wherein said database is resident on said server.

9. The apparatus of claim 8 wherein said communication between said local host and said one of said nodes is carried through said server.

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10. The apparatus of claim 1 wherein said database is resident on said local host.

11. The apparatus of claim 1 wherein said database is resident on one of said nodes that is remote from said local host.

12. An apparatus for using an article of commerce to generate the network address of a computer on a network, comprising:

- (a) means for generating a signal corresponding to an article identification number which is used to identify the article of commerce in accordance with a standard that specifies the length of the identification number;
- (b) a database having a plurality of identification numbers including said article identification number and a plurality of network addresses, and associating each of said identification numbers with at least one of said network addresses; and

(c) control means responsive to said signal and operatively coupled to said database for retrieving from said database at least one of said network addresses which correspond to said article identification number; further comprising a local host in communication with said database to receive the network address provided by said database;

further comprising a network including a plurality of nodes, each associated with one of said plurality of network addresses; wherein said local host is adapted for communicating with one of said nodes using said network address generated by said database.

13. The apparatus of claim 12 wherein said identification numbers are Universal Product Codes.

14. The apparatus of claim 12 wherein said network addresses are Uniform Resource Locators.

15. The apparatus of claim 12 further comprising a remote host adapted for network communication, wherein said reader for generating said signal is resident on said local host, and said database is resident on said remote host.

16. The apparatus of claim 12 wherein said identification numbers are EAN codes.

17. The apparatus of claim 12 wherein said means for generating said signal includes a bar code scanner.

18. The apparatus of claim 12 wherein said means for generating said signal includes a keyboard.

19. The apparatus of claim 12 wherein said local host is a multi-user computer.

20. The apparatus of claim 12 wherein said local host is a single-user computer.

21. The apparatus of claim 12 wherein said means for generating said signal is coupled to said local host so that said signal is communicated to said database through said local host.

22. In an apparatus comprising means for generating a signal corresponding to a product identification number which is used to identify the article of commerce bearing an indicia on which said product identification number is encoded in accordance with an extrinsic standard that specifies the length of the identification number; a computer database having a plurality of identification numbers including said product identification number, and a plurality of network addresses, and associating each of said product identification numbers with at least one of said network addresses; and control means responsive to said signal and operatively coupled to said database for retrieving from said database at least one of said network addresses which corresponds to said product identification number;

- a method for generating the address of a node on the network, comprising the steps of:

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(a) associating in computer memory at least a portion of a product identification number with the node's network address; said identification number having recognized significance in accordance with an extrinsic standard as a number identifying an article of commerce;

(b) providing an article of commerce bearing an indicia on which said identification number is encoded;

(c) reading at least a portion of said identification number from said indicia; and

(d) retrieving from said computer memory the network address associated therein with said product identification number.

23. The method according to claim 22 wherein said identification number is a Universal Product Code.

24. The method according to claim 22 where said network address is a Uniform Resource Locator.

25. The method according to claim 22 wherein said indicia is encoded in machine-readable format.

26. The method according to claim 22 where said indicia is encoded in human-readable format.

27. The method according to claim 22 wherein said step of reading is performed using a bar code reader.

28. The method according to claim 22 wherein said step of reading is performed by a human reading said indicia and entering said identification number using a keyboard.

29. The method according to claim 22 wherein the database has one or more tables containing said identification number and said network address.

30. The method according to claim 29 wherein said tables are distributed over a plurality of computers.

31. The method according to claim 29 wherein said tables are resident on a single computer.

32. The method according to claim 22 wherein said identification number is an EAN code.

33. An apparatus for using an article of commerce to access a remote computer, comprising:

- (a) a machine-readable indicia associated with the article of commerce, said indicia encoding at least one of a plurality of identification numbers, said encoded identification number corresponding to the article in accordance with an extrinsic standard;

(b) an input device generating a signal corresponding to said encoded identification number; and

(c) a database containing a plurality of network addresses and said plurality of identification numbers, each of said identification numbers being associated with at least one of said plurality of network addresses; said database being responsive to said signal for providing one of said network addresses which is associated with said encoded identification number;

further comprising a local host in communication with said database to receive the network address provided by said database;

further comprising a network including a plurality of nodes, each associated with one of said plurality of network addresses; wherein said local host is adapted for communicating with a selected one of said nodes using said network address generated by said database.

34. The apparatus of claim 33 wherein said means for generating said signal is coupled to said local host so that said signal is communicated to said database through said local host.

35. An apparatus for using an article of commerce to access a remote computer, comprising:

- (a) a machine-readable indicia associated with the article of commerce, said indicia encoding at least one of a



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plurality of identification numbers, said encoded identification number corresponding to the article in accordance with an extrinsic standard;

- (b) an input device generating a signal corresponding to said encoded identification number; and
- (c) a database containing a plurality of network addresses and said plurality of identification numbers, each of said identification numbers being associated with at least one of said plurality of network addresses; said database being responsive to said signal for providing one of said network addresses which is associated with said encoded identification number;

further comprising a local host operatively coupled to said means for generating a signal; a server operatively coupled to said local host and said database; and a network including a plurality of nodes, each associated with one of said plurality of network addresses; wherein said server is adapted for communicating with a selected one of said nodes using said network address generated by said database.

**36.** An apparatus for using an article of commerce to generate the network address of a computer on a network, comprising:

- (a) means for generating a signal corresponding to an article identification number which is used to identify the article of commerce in accordance with a standard that specifies the length of the identification number;
- (b) a database having a plurality of identification numbers including said article identification number and a plu-

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ality of network addresses, and associating each of said identification numbers with at least one of said network addresses; and

- (c) control means responsive to said signal and operatively coupled to said database for retrieving from said database at least one of said network addresses which correspond to said article identification number; further comprising:

- (d) a first network containing a plurality of nodes, each corresponding to one of said network addresses;

- (e) a local host in communication with said network and said control means and adapted for communication with that one of said nodes corresponding to the network address retrieved by said control means.

**37.** The apparatus of claim **36** wherein said local host is a multi-user computer with a plurality of user terminals.

**38.** The apparatus of claim **36** wherein said local host is a single-user computer

**39.** The apparatus of claim **36** further comprising a server, wherein said local host computer is remotely connected to said server and said database is resident on said server.

**40.** The apparatus of claim **39** wherein said communication between said local host and said one of said nodes is carried through said server.

**41.** The apparatus of claim **36** wherein said database is resident on said local host.

\* \* \* \* \*



US006577861B2

**(12) United States Patent**  
**Ogasawara****(10) Patent No.: US 6,577,861 B2****(45) Date of Patent: Jun. 10, 2003****(54) ELECTRONIC SHOPPING SYSTEM  
UTILIZING A PROGRAM DOWNLOADABLE  
WIRELESS TELEPHONE****(75) Inventor: Nobuo Ogasawara, San Diego, CA  
(US)****(73) Assignee: Fujitsu Limited (JP)****(\*) Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(h) by 0 days.**(21) Appl. No.: 09/211,308****(22) Filed: Dec. 14, 1998****(65) Prior Publication Data**

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705/26****(58) Field of Search .... 705/5, 16-26,  
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418, 419, 420, 422, 4.1, 4.5; 370/352-358;  
235/462, 472; 701/1****(56) References Cited****U.S. PATENT DOCUMENTS**

5,334,824	A	8/1994	Martinez	
5,410,326	A	4/1995	Goldstein	455/4.1
5,424,524	A	6/1995	Ruppert et al.	
5,465,288	A	11/1995	Falvey et al.	
5,500,517	A	3/1996	Cagliostro	

(List continued on next page.)

**FOREIGN PATENT DOCUMENTS**

JP	0843290	A2	5/1998
EP	0865219	A2	9/1998
NL	9000236		10/1990
WO	97/50222		12/1997
WO	99/46706		9/1999

**OTHER PUBLICATIONS**

Radio Communications Report, v 18, n 48, p.24 "Millicom releases GSM online payment system." Nov. 29, 1999.\*

Business Wire, "Lava2140 Introduces Wireless E-commerce Application at PCS '99; E-Shop Mobile Delivers Unified Internet and Wireless Shopping Solution" Sep. 23, 1999.\*

Newsbytes News Network, "France Telecom Readies E-Commerce By Phone Service", Feb. 24, 1999.\*

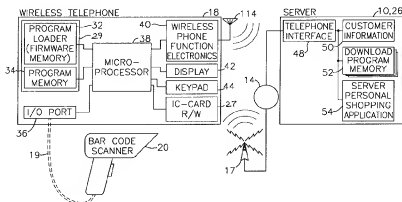
Blankenhorn, D., 'Phones win Headlines during CES Week', Newsbytes, May 28, 1992; Dialog Information Services, file 275; Gale Group Computer DB (TM), Dialog Accession # 10516628.

Nuttall, N. 'First the PC, now the Videophone', Times of London (TL), Apr. 24, 1992. Retrieved from: Dialog Information Services, file 710; Times/Sun. Times (London), Dialog Accession # 06875280.

Fenner, E., 'AT&amp;T: The Store without Walls', Money, v22, n12, pp. 88-96, Dec. 1993. Retrieved from: Dialog Information Services, file 15; ABI/Inform ®, Dialog Accession # 00788284.

**Primary Examiner—Richard Chilcott****(74) Attorney, Agent, or Firm—Christie, Parker & Hale, LLP****(57) ABSTRACT**

An electronic shopping system facilitates purchase transactions via a wireless telephone. A purchase transaction program is downloaded from the seller's server to a purchaser's wireless telephone via a program loader contained within the purchaser's wireless telephone. The purchase transaction program is stored in a program memory of the purchaser's wireless telephone. The purchase transaction program is used by the purchaser to facilitate the selection of items to be purchased, as well as payment therefor. An external bar code reader is attached to the wireless telephone to facilitate the selection of items to be purchased and is controlled via the downloaded purchase transaction program.

**36 Claims, 8 Drawing Sheets**

# US 6,577,861 B2

Page 2

U.S. PATENT DOCUMENTS			
5,594,779 A	*	1/1997 Goodman	455/54.2
5,606,361 A		2/1997 Davidsohn et al.	
5,608,778 A		3/1997 Partridge	
5,625,673 A		4/1997 Grewe et al.	
5,675,524 A		10/1997 Bernard	
5,722,069 A	*	2/1998 Donner	455/418
5,724,092 A		3/1998 Davidsohn et al.	
5,825,002 A		10/1998 Rosiak	
5,832,115 A		11/1998 Rosenberg	
5,867,712 A		2/1999 Shaw et al.	
5,918,211 A	*	6/1999 Sloane	705/16
5,970,473 A		10/1999 Gerszberg et al.	
6,055,513 A		4/2000 Katz et al.	
6,085,176 A		7/2000 Woolston	
6,124,882 A		9/2000 Voos et al.	
6,134,548 A	*	10/2000 Gottsman et al.	705/26
6,144,848 A	*	11/2000 Walsh et al.	455/419
6,199,753 B1		3/2001 Tracy et al.	
6,202,051 B1		3/2001 Woolston	
6,226,031 B1		5/2001 Barraclough et al.	
6,313,864 B1		11/2001 Iabata et al.	
6,314,406 B1		11/2001 O'Hagan et al.	
6,317,718 B1	*	11/2001 Fano	705/1
6,377,570 B1		4/2002 Vaziri et al.	

\* cited by examiner

*FIG. 1*

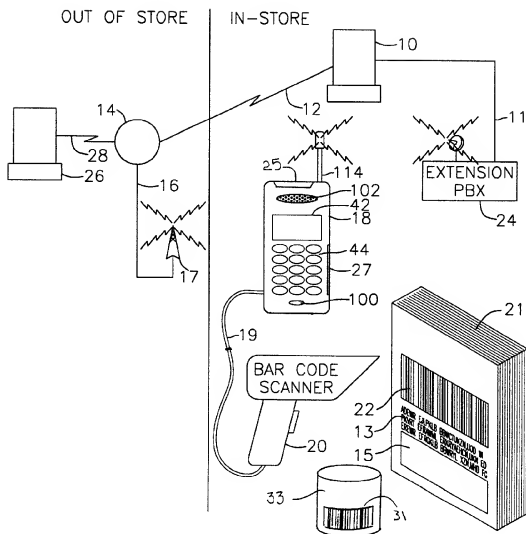
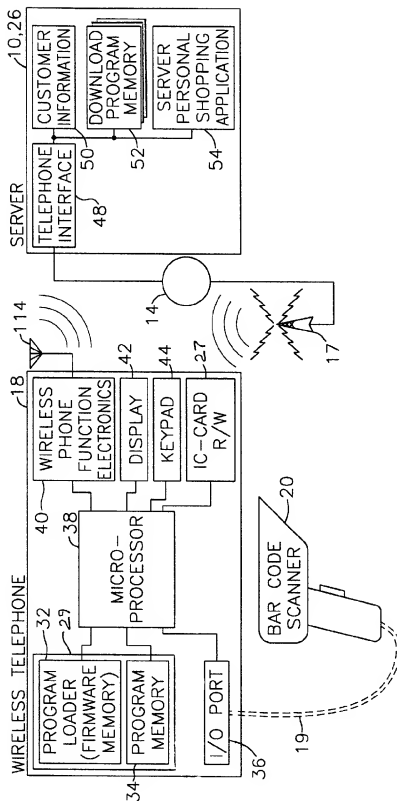


FIG. 2



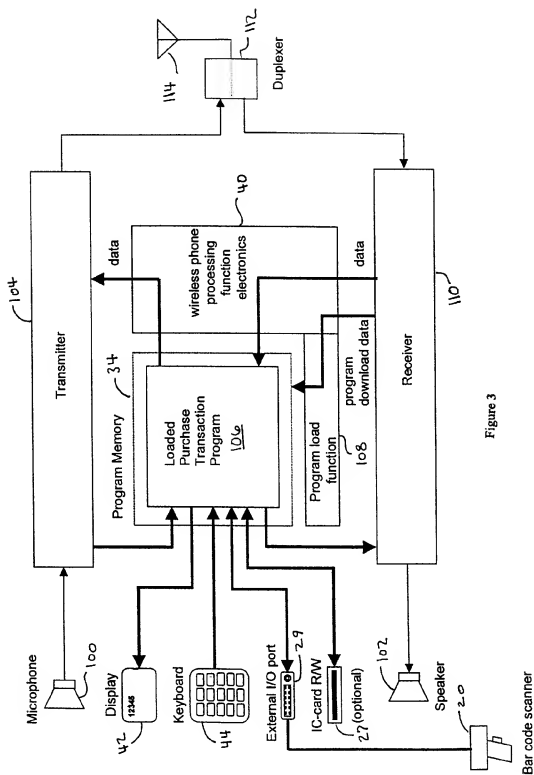


Figure 3

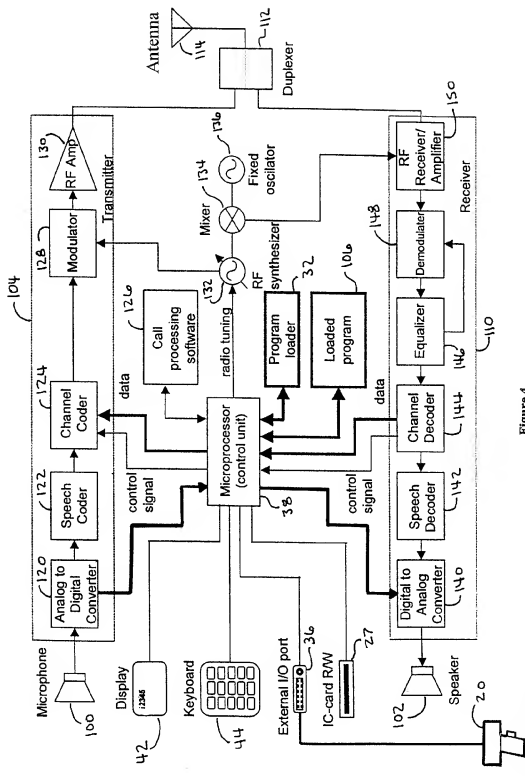
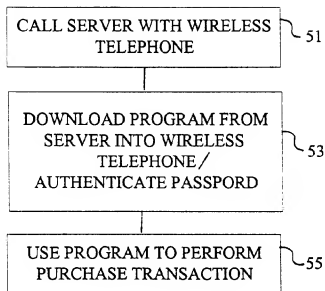
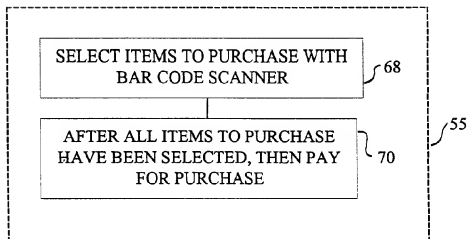
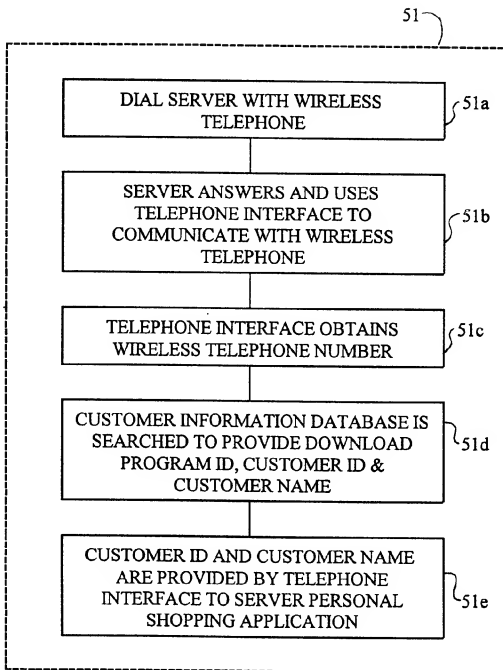
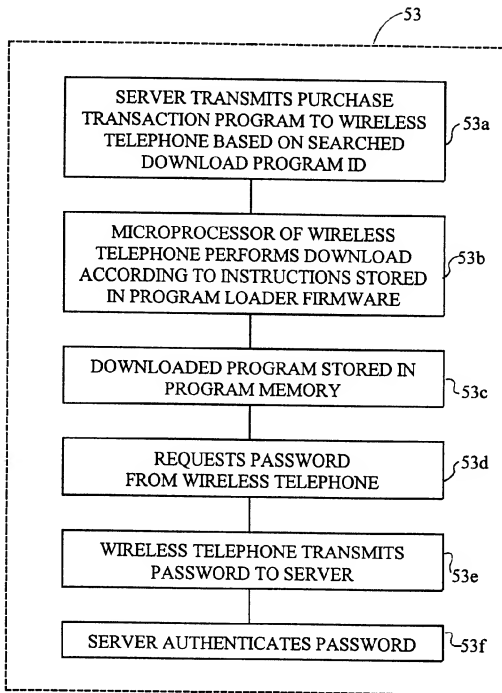


Figure 4

**FIG. 5****FIG. 8**



*FIG. 6*

*FIG. 7*



# 1

## ELECTRONIC SHOPPING SYSTEM UTILIZING A PROGRAM DOWNLOADABLE WIRELESS TELEPHONE

### FIELD OF THE INVENTION

The present invention relates generally to electronic shopping systems and more particularly to an electronic shopping system which utilizes a program downloadable wireless telephone into which a purchase transaction program is downloaded from a vendor's server to enable a shopper to perform purchase transactions with the wireless telephone.

### BACKGROUND OF THE INVENTION

Electronic shopping systems for allowing a shopper to purchase products without necessarily having to travel to a store are well known. One example of a contemporary electronic shopping system is a cable television shopping channel, wherein products are advertised on television. A shopper merely watches the television and when an item is shown for which a purchase is desired, the shopper uses a telephone to call an agent of the seller to place an order for the desired product. Usually, a credit card number is given over the telephone to facilitate payment for the purchased item. The purchased product is then shipped directly to the buyer.

In an improved version of cable television shopping, an interactive or bidirectional cable system allows the purchaser to make selections directly from the television screen. This may be accomplished by using a menu driven system controlled by the television remote control. In this manner, the need to make a telephone call is avoided. The added convenience of shopping directly from the television is expected to enhance consumer response to such advertisements.

Similar to cable television shopping is the use of the Internet to make desired purchases from the home. Many companies presently offer their products for sale on the Internet, and the number doing so is increasing rapidly. Products as diverse as pizzas, books and automobiles can readily be purchased from the comfort of a person's home, simply by locating the web page of a company selling the desired item, selecting the item to be purchased, providing an address to which the item is to be delivered, and providing a credit card number to pay for the purchased item.

However, one disadvantage of such contemporary electronic shopping systems is that they require that the prospective purchaser subscribe to either cable television or to an Internet service, for which a subscription fee is charged. Further, such contemporary electronic shopping systems require that purchases be made from either the purchaser's television or computer, both of which are typically located in the purchaser's home and cannot usually be easily transported. Thus, the purchaser is undesirably constrained to shopping from the home.

Because of the highly mobile nature of modern society, it is desirable to provide the ability to conduct electronic shopping from locations away from the home. For example, a purchaser may wish to order items from the workplace, over lunch in a restaurant, while traveling, and in a variety of other, different circumstances wherein the purchaser does not have access to his or her home television or computer.

It is also known to use a personal shopping system (PSS) wherein the purchaser carries a scanner embedded hand-held terminal within a store. Bar codes of products to be pur-

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chased are scanned with the hand-held scanner. A display on the scanner embedded hand-held terminal displays an item price and a running total of the purchase prices of the products which have been scanned. Payment for the scanned products is accomplished at a checkout counter in a conventional manner.

However, contemporary personal shopping systems require the use of a dedicated personal shopping system terminal, which has a small display, a number keypad, and a built-in bar code scanner. Of course, the use of such a contemporary dedicated portable personal shopping system requires a substantial financial investment by the retailer in the portable personal shopping system terminals.

Wireless telephones, such as cellular telephones, are very popular. As the price of wireless telephones and the cost of making calls therewith continue to decrease, more people are purchasing and using wireless telephones.

As used herein, the term wireless telephone is defined to include mobile telephones, cellular telephones, satellite telephones and any other telephones not requiring a wired connection, such as cordless home telephones which have a limited range and must generally therefore be used close to the house.

In view of the low cost and ubiquitous nature of wireless telephones, it is desirable to provide a system for performing electronic shopping which utilizes a customer's own wireless telephone for the selection of items to be purchased, as well as for providing payment for such purchased items. By utilizing the customer's own wireless telephone for electronic shopping, rather than using a dedicated personal shopping system terminal, the substantial investment associated with the use of such dedicated personal shopping system terminals is eliminated.

### SUMMARY OF THE INVENTION

The present invention specifically addresses and alleviates the above-mentioned deficiencies associated with the prior art. More particularly, the present invention comprises an electronic shopping system for facilitating purchase transactions via a wireless telephone to which a program download function, a downloaded program execution function and an input/output port for external scanner connection have been added. However, since the functionality added to the wireless telephone is small, the wireless telephone is still capable of being produced as an inexpensive commodity product. The electronic shopping system comprises a server and at least one wireless telephone for communicating with the server. Thus, according to one preferred embodiment of the present invention, once a customer visits a store, the customer simply dials the number of the store's personal shopping system service. The personal shopping system application is then automatically downloaded into the customer's telephone. The downloaded program automatically begins execution and provides the desired functionality of a personal shopping system. A bar code scanner in communication with the telephone is used to scan the bar codes of purchased items. Thus, the present invention allows retailers to implement a personal shopping system while minimizing the cost investment necessary to do so.

More particularly, according to the present invention a store maintains a server which provides a downloadable purchase transaction program to a purchaser's wireless telephone when the purchaser calls the store's server via the purchaser's wireless telephone. After downloading the purchase transaction program from the server to the wireless telephone, the server communicates with the wireless tele-

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phone so as to use the downloaded purchase transaction program to facilitate selection of the desired product(s) for purchase, as well as to facilitate payment therefore.

It is desirable to download the purchase transaction program into a wireless telephone as needed, rather than to permanently store the purchase transaction program in the wireless telephone, because downloading allows a plurality of different sellers to utilize their own programs, rather than requiring a single, universal program for all sellers. It should be appreciated that different sellers will desire to incorporate different messages, advertisements, menus, etc. into their own purchase transaction program and to further customize their own purchase transaction program so as to tailor it to the particular products being sold.

Further, since different types of wireless telephones tend to have different displays, keypads, input/output ports, etc., it is desirable to download a purchase transaction program which is specifically tailored to a particular type of wireless telephone, so as to make the best use of that particular wireless telephone's features.

The purchase transaction program transmitted from the server to the wireless telephone is loaded into a program memory of the wireless telephone via a program loader of the wireless telephone. The program loader effects loading of the purchase transaction program into the program memory as the purchase transaction program is being transmitted from the server to the wireless telephone. The downloaded purchase transaction program contains instructions for facilitating product selection and payment via the wireless telephone. Thus, the purchase transaction program converts the wireless telephone into a point of purchase electronic shopping terminal.

Although the electronic shopping system of the present invention is described herein as being used to purchase products, those skilled in the art will appreciate that the electronic shopping system is likewise suitable for purchasing services, or anything else which is desired. Thus, use of the term "product" is by way of illustration only and not by way of limitation. Further, as used herein the term "store" is defined to include any seller of goods or services, including a retail store, a wholesale store, or any other vendor.

The server may either be disposed proximate (preferably within) a store with which purchase transactions are performed or at a location remote from the store with which purchase transactions are performed. The remote server may be located at any convenient location, since communication between the remote server and a purchaser's wireless telephone can be provided via a cellular telephone network. Typically, the remote server will be located in a manner which minimizes telephone costs.

The server, particularly a store server, may be either a dedicated server or may perform other functions, e.g., inventory control, accounting, word processing, and any other desired computer functions.

Optionally, a wireless extension PBX or the like may be utilized to facilitate wireless communication between the server and a purchaser's wireless telephone. The use of an extension PBX is particularly beneficial when a store server is provided and when electronic shopping within the store is desirable. Typically, the extension PBX is in wired communication with the store server. Use of such an extension PBX may eliminate or reduce the need for public cellular service provided by a common carrier, thus reducing costs substantially.

The program downloadable wireless telephone of the present invention further comprises a microprocessor which

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is in communication with the program loader such that the microprocessor facilitates execution of a download program stored by the program loader. Thus, by executing the download program, downloading of a purchase transaction program from the server to the wireless telephone is facilitated.

The microprocessor is also in communication with the program memory into which the purchase transaction program is downloaded, such that the microprocessor facilitates execution of the purchase transaction program.

The program loader preferably comprises a non-volatile firmware memory. Those skilled in the art will appreciate that various different types of memory are likewise suitable. For example, the program loader may comprise either read-only memory (ROM) or random access memory (RAM). The program loader may comprise either volatile or non-volatile memory. Various different memory devices may be utilized, including electrically programmable read-only memory (EPROM), erasable electronically programmable memory (EEPROM), flash memory, magnetic storage devices such as disc or tape drives, optical memory such as CD-ROM, or magneto-optical memory.

The firmware memory of the program loader contains instructions, i.e. the download program, which are executed to effect storage in the program memory of the purchase transaction program received by the wireless telephone from the server. That is, the firmware memory contains instructions for downloading the purchase transaction program from the server and for storing the purchase transaction program within the program memory of the wireless telephone.

The program memory preferably comprises a volatile random access memory (RAM) such as those commonly used in personal computers. However, various other types of read/write memory such as flash memory, magnetic storage devices, optical storage devices, and magneto-optical devices are likewise suitable. Typically, a new purchase transaction program is downloaded each time a telephone call is made to the server by the wireless telephone.

Preferably, the wireless telephone of the electronic shopping system of the present invention comprises an input/output port in communication with the microprocessor thereof. A bar code scanner attached to the input/output port of the wireless telephone facilitates scanning of bar codes which represent the items to be purchased.

Further, the wireless telephone of the present invention preferably comprises a built-in IC card reader/writer or the like in communication with the microprocessor thereof. The IC card reader/writer facilitates payment for purchased goods with an IC card or the like.

The bar code scanner may alternatively be built into the wireless telephone rather than be connectable thereto. That is, the bar code scanner may be disposed at least partially within the housing of the wireless telephone, so as to define an integral unit therewith.

Thus, according to the present invention, a customer uses his own wireless digital telephone at a retail store as a personal shopping terminal. When the customer visits the store, a bar code scanner is attached to the customer's wireless telephone if the customer's wireless telephone does not have a scanner built therein to. The scanner may be provided by the retail store, or alternatively may be the customer's own scanner. If a scanner must be added to the wireless telephone, then either a cable or a cordless connection, such as an iRDA connection is used.

The customer calls a predefined telephone number for the store's personal shopping service. Either a commercial tele-

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phone network or an in-store extension network may be utilized to make the telephone call. After calling the predefined telephone number, the customer's telephone is connected to the store server (or a remotely located, out of store server). In either instance, the server obtains the caller's telephone number, then searches a customer information database. If the caller's telephone number is in the customer information database, the server assumes (at least temporarily) that an authorized customer is making the telephone call and next obtains the telephone type from the customer information database. Then the server downloads a purchase transaction program to the customer's wireless telephone. Next, the server optionally requests for the customer to input a password, so as to further verify the customer's authority to make purchase transactions.

The downloaded purchase transaction program is a personal shopping application program suitable for use with the customer's wireless telephone, based upon the type of telephone that the customer is using.

Alternatively, password authentication may be performed prior to purchase transaction program download. However, performing password authentication purchase transaction after program download allows the downloaded purchase transaction program to control the password entry process, thus allowing more flexibility in the password entry process. In this manner, the downloaded purchase transaction program may, for example, provide guidance to aid in the password entry process.

According to the preferred embodiment of the present invention, the telephone number, telephone type, and password are pre-registered, along with a customer ID, customer name, and any other desired customer profile information, when the customer enrolls in the personal shopping system. In this manner, the customer is identified by a telephone number rather than a customer ID card. Once an appropriate purchase transaction program has been downloaded to the customer's wireless telephone, then the wireless telephone functions as a personal shopping terminal. When a customer scans an item, the telephone sends the scanned bar code information to the server. The server then preferably returns a description of the item and price information. This item description and price information is displayed on the telephone's display. When the customer finishes shopping, then self payment is performed, preferably utilizing the customer's wireless telephone. This may optionally be performed at a checkout terminal of the store. When checkout is performed at a store check-out terminal, the telephone may be used to scan a bar code of the checkout terminal or, alternatively the checkout terminal is provided with the telephone number or customer ID so as to link the telephone transaction and the checkout terminal to one another to effect payment.

Thus, according to the preferred embodiment of the present invention, both the customer and the telephone type are identified by the customer's telephone number. Preferably, different programs are utilized for each different telephone type, due to differences in the microprocessor, display, keypads, input/output ports, and other interfaces of each different type of wireless telephone.

Thus, according to the preferred embodiment of the present invention, the downloaded purchase transaction program requests a password input from the user, displays password input guidance, and reads keypad input of the password. The password is sent to the server for customer verification. The downloaded purchase transaction program receives password authentication verification from the

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server. If password authentication verification is okay, then the downloaded purchase transaction program proceeds. If password authentication is not okay, then the downloaded purchase transaction program repeats its request for a valid password for a predetermined number of times. After the predetermined limit has been exceeded, then the downloaded purchase transaction program ceases. The downloaded purchase transaction program facilitates the scanning of desired bar codes and sends the scanned bar codes to the server. The downloaded purchase transaction program receives a response from the server, then displays the response, if appropriate. A displayed message provides a description and price for the scanned item. Also, total calculated price is provided as purchases are accumulated.

Preferably, the downloaded purchase transaction program facilitates return of previously scanned items, by utilizing the keypad to identify the item to be returned, or by scanning the returned item again and depressing a predefined key in the keypad to indicate return item. The returned item's price is removed from the accumulated total.

The downloaded purchase transaction program also facilitates payment for the purchases. When self payment is made, the customer depresses a predefined key sequence on the keypad of the wireless telephone to inform the downloaded purchase transaction program that shopping is finished. The total price is displayed and the customer acknowledges the total via the keypad. After verifying the total price, then the downloaded purchase transaction program optionally asks the customer which payment method is to be utilized, preferably via a menu. The customer then selects the desired method of payment via the keypad. Optionally, the customer may use a pre-registered credit card account to effect such payment. If a receipt is requested by the customer, then a receipt printer server at a in-store location provides the customer with a receipt.

Alternatively, payment may be effected at a checkout counter, wherein the customer goes to the checkout terminal, e.g., a point-of-sale terminal, and scans the checkout terminal's bar code, or input checkout terminal ID from the keypad, or input the telephone number or customer ID at the checkout terminal in order to link the wireless telephone and the checkout terminal to one another. The checkout terminal receives shopping information from the server (which was previously communicated from the wireless telephone to the server) and payment may be effected in a contemporary manner, e.g., via cash, credit card, debit card, check, etc.

If a remote server is utilized, and the remote server services a plurality of different retail stores using the same telephone number, then the customer's telephone may send store location information, which may be effected via scanning of a store bar code located on a shopping cart, for example. This store location information is used for inventory management such that items purchased from a given store are identified as having been purchased from that particular store.

According to the preferred embodiment of the present invention the server receives the incoming telephone call from the customer's wireless telephone and downloads the appropriate purchase transaction program to the customer's wireless telephone. The server also sends and receives information to and from the customer's telephone, via a server personal shopping application. When the server is called by the customer's telephone, the telephone interface obtains the caller's telephone number, then searches the customer information database within the server so as to obtain the customer's telephone type, the customer's iden-

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tionification number, and the customer's name. This information is preferably stored in the server's customer information database when the customer enrolls in the personal shopping program. The appropriate download program is then selected based upon the customer's telephone type information and is downloaded to the customer's wireless telephone. The customer's identification number and name are passed to the server personal shopping application, from the customer information database.

During shopping, each message which comes from a customer's wireless telephone is associated with the customer's wireless telephone number, customer identification, and/or some other desired customer identification. When the server receives bar coded data from the customer's wireless telephone, the server searches a database to obtain the item description and price. Item description and price information is then transmitted to the customer's wireless telephone. A list of the items being purchased is maintained by the server, so as to facilitate later payment therefore.

Optionally, the server may additionally transmit other information, such as promotional information, discount information, a personal greeting, etc. to the customer's wireless telephone, if desired.

The optional built-in IC Card reader/writer facilitates interface to an IC or Smart Card. The use of such an IC Card will extend the security features and services of the wireless telephone. Password authentication is optionally replaced by automatic authentication via the IC Card. An IC Card provides dual direction authentication, wherein both the customer and the server are validated. Further, the IC Card may be used for payment, either via electronic cash or secured credit card. An electronic receipt may be stored within the IC Card. The electronic receipt is originated at the server and sent to the wireless telephone and then stored in the IC Card. Stored electronic receipts may later be input to a personal financial application, such as in a personal computer at the home of the customer. The electronic receipt may also simply be displayed by a home personal computer. A plurality of such electronic receipts may be stored in the IC Card, so as to define a shopping history of the customer.

Modified wireless telephones according to the present invention may also be used in a variety of other, different applications. Since many different application programs may be downloaded from various different servers, and since the wireless telephone is carried by its owner (rather than remaining at a retail location, such as in contemporary personal shopping systems) implementation in a variety of different applications is possible. Thus, a user may interact with the display and keypad of the wireless telephone to perform a variety of different desired transactions.

Voice/sound guidance and voice command/inquiry may be utilized to simplify the process. Voice/sound guidance and voice command/inquiry are preferably performed by the downloaded purchase transaction program and/or server in parallel with non-voice processing. A downloaded purchase transaction program may provide voice guidance and/or error messages by voice through speaker of wireless phone in parallel with displaying of message guidance via a display of the phone. Also, the downloaded purchase transaction program may optionally have voice recognition capability. Thus, voice command, menu selection by voice and/or purchased item selection by voice may be performed in addition to using keys of the keypad of the phone and scanning bar codes with an external scanner.

The server application program and/or store personnel at the server site may also provide voice/sound guidance and

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voice command/inquiry capability in parallel with non-voice processing. A server application may send voice guidance to the wireless telephone, and also may accept voice command and/or purchase item selection by voice if the server application program has voice recognition capability. Further, store personnel at the server site may accept voice inquiry from the wireless telephone and may provide answers to the wireless telephone by voice.

Thus, the present invention provides a convenient means for shopping, either while at a store where goods are to be purchased or while away from the store. The selection of desired items is easily and conveniently performed by simply scanning bar codes representative of the desired items. Payment for the purchased items is easily accomplished with an IC card or the like. The personal shopping system of the present invention can be implemented with minimal investment since it involves the modification of an existing product, i.e., a wireless telephone.

## BRIEF DESCRIPTION OF THE DRAWINGS

These and other features, aspects and advantages of the present invention will be more fully understood when considered with respect to the following detailed description, appended claims and accompanying drawings, wherein:

FIG. 1 is a schematic overview of the electronic shopping system of the present invention;

FIG. 2 is a block diagram showing the wireless telephone and a server in further detail;

FIG. 3 is a functional block diagram of the wireless telephone of the present invention;

FIG. 4 is a block diagram of the wireless telephone of the present invention showing the interrelationship of the components of the present invention (shown with bold or heavy lines) with the components of a contemporary wireless telephone;

FIG. 5 is a flow chart showing operation of the electronic shopping system of the present invention;

FIG. 6 is a flow chart showing the step of calling the server with the wireless telephone according to FIG. 5, in further detail;

FIG. 7 is a flow chart showing the step of downloading the program from the server into the wireless telephone according to FIG. 5, in further detail;

FIG. 8 is a flow chart showing the step of using the program to perform a purchase transaction according to FIG. 5, in further detail; and

FIG. 9 is a customer information table.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The detailed description set forth below in connection with the appended drawings is intended as a description of the presently preferred embodiment of the invention, and is not intended to represent the only form in which the present invention may be constructed or utilized. The detailed description sets forth the construction and functions of the invention, as well as the sequence of steps for operating the invention in connection with the illustrated embodiment. It is to be understood, however, that the same or equivalent functions may be accomplished by different embodiments that are also intended to be encompassed within the spirit and scope of the invention.

Referring now to FIG. 1, the present invention generally comprises a store server 10 in communication with a com-

mercial telephone network 14, typically via a wire connection 12. Alternatively, the store server 10 may communicate with the commercial telephone network 14 via any other desired means, such as via fiber optics, radio signals, etc. Such commercial telephone networks are those commonly used to communicate voice and data both locally and over long distances. Example of such commercial telephone networks include Pacific Bell, General Telephone, AT&T, MCI and Sprint.

The commercial telephone network 14 facilitates connection of the store server 10 to a wireless telephone 18 via a cellular telephone network 17, to which the conventional telephone network 14 is in communication, typically via a wire connection 16. Examples of such cellular telephone networks include L.A. Cellular and Pacific Bell. Again, the wired connection 16 may alternatively comprise a fiber optic, radio or other means of communication.

The cellular telephone network 17 communicates with the wireless telephone 18 via radio transmission according to well known principles.

Alternatively, a remote server 26, rather than the store server 10, communicates with the wired telephone network 14, again preferably via a wire connection 28. The wire connection 28 may alternatively comprise fiber optic, radio, or other communication means.

Optionally, the store server 10 is in communication with an extension PBX 24 or the like, preferably via a wire connection 11. The extension PBX 24 communicates with the wireless telephone 18 via a radio connection.

Optionally, an external bar code scanner 20 communicates with the wireless telephone 18 via wire connection 19. Alternatively, the bar code scanner 20 communicates with the wireless telephone 18 via infrared, laser, radio, or any other desired means.

Alternatively, a built-in bar code scanner 25 and/or a built-in IC card reader/writer 27 are formed integrally with the wireless telephone 18. In a store, a bar code on a purchased item 33 is scanned by bar code scanner 20 attached to a wireless telephone 18.

A catalog 21 of the items which can be purchased contains a bar code 22 for each such item, and preferably also contains descriptive text 13 and a picture 15 of each item. The use of such a catalog 21 or the like facilitates the purchasing of products via the electronic shopping system of the present invention when the purchaser is not in the store where the items are sold. Typically, each item 33 also has a bar code 31 applied thereto.

The store server 10, as well as any remote server 26, if used, stores the purchase transaction program which is to be downloaded into the wireless telephone 18 when a call is made from the wireless telephone 18 to the store server 10 or the remote server 26. The store server 10 and the remote server 26 also contain a program, i.e., the server personal shopping application (FIG. 2), which cooperates with the purchase transaction program downloaded to the wireless telephone 18 to effect purchase transactions, including the selection of items to be purchased and payment therefore, as discussed in detail below.

When the wireless telephone 18 is used within or close to the store where the store server is located, then the optional extension PBX 24 may be utilized to facilitate radio communication between the store server 10 and the wireless telephone 18, thereby eliminating the need for the cellular telephone network 17. By using an extension PBX 24, reliable communication between the store server 10 and the wireless telephone 18 is assured and costs associated with

use of the cellular network 17 are avoided. Those skilled in the art will appreciate various other means of providing in-house radio communication between the wireless telephone 18 and the store server 10 are likewise suitable.

In use, a purchaser merely dials the telephone number of the store server 10 or remote server 26 with the wireless telephone 18. Upon connection of the wireless telephone 18 to the store server 10 or the remote server 26, the purchase transaction program is downloaded from the store server 10 or the remote server 26 into the wireless telephone 18 under the direction of a program loader 32 (FIG. 2).

More particularly, the telephone interface of the store server 10 or remote server 26 facilitates receipt of the telephone call from the customer and downloading of the appropriate purchase transaction program to the wireless telephone 18. The server personal shopping application facilitates sending and receiving of information between the customer's wireless telephone 18 and the store server 10 or remote server 26. When the store server 10 or remote server 26 is called by the customer's wireless telephone 18, then the telephone interface obtains the customer's phone number and then searches the customer information database in the store server 10 or remote server 26 in order to obtain the following information: customer's telephone number, download program ID, customer ID, and customer name. This information is preferably stored in the store server 10 or remote server 26 when the customer enrolls in the personal shopping application. In this manner, the customer's telephone number provides a degree of validation, and thus serves to indicate that the customer is authorized to make purchases.

Based upon the download program ID, the appropriate download program is downloaded from the store server 10 or remote server 26 to the wireless telephone 18. The particular purchase transaction program (which has a unique ID) which is transmitted from the store server 10 or remote server 26 to the wireless telephone 18 is selected so as to be consistent with the purchaser's profile, e.g., telephone type, as well as the purchaser's personal preferences, such as language and particular interests.

The store server 10 or remote server 26 personal shopping application facilitates purchase transactions. Each message coming from a wireless telephone 18 is associated with the customer's telephone number, the customer ID, or some other unique identification. When the store server 10 or remote server 26 receives bar code data from the customer's wireless telephone 18, then the store server 10 or remote server 26 searches a database and obtains a description and price for the item scanned. The item description and price is then transmitted to the customer's wireless telephone 18 and is preferably displayed upon the display 42 thereof. All of the data received from the customer's wireless telephone 18, including data regarding returned items (those which the customer has decided not to purchase) are kept by the store server 10 or remote server 26 so as to facilitate a subsequent payment procedure.

Optionally, the store server 10 or remote server 26 also sends other information to the customer's wireless telephone 18. Such other information may comprise promotional information, discount information, a personal, etc.

After being downloaded, the purchase transaction program optionally requests that the purchaser enter a password. The use of such a password provides further validation of the customer. The use of such a password is particularly useful in preventing the use of a stolen wireless telephone 18 in the performance of unauthorized purchase



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transactions. The purchase transaction program may display instructions and/or provide voice guidance to the user for using the keypad to input the password. Voice recognition may be used to enter the password. Preferably, the download program, the server, or store personnel provide guidance for entering the password, as described below. The purchase transaction program may either verify the password or communicate the password to the server for verification. If the password is determined to be valid, then the customer is prompted to scan bar codes of items which are to be purchased. If the password is determined to be invalid, then the user is prompted to re-enter the password.

After the password is verified, the purchase transaction program facilitates use of the wireless telephone 18 to both select items to be purchased and pay for those items. Items are preferably selected for purchase by scanning bar codes 31 or 22 indicative of the item to be purchased via bar code scanner 20 which is connected to the wireless telephone 18 or via built-in bar code scanner 25. Alternatively, items to be purchased may be selected by entering a stock number, such as a Universal Product Code (UPC) code, via the telephone keypad.

After the desired items have been selected, payment therefor is preferably effected via a built-in IC card reader/writer 27.

When the wireless telephone 18 is used to make purchases within a store, bar codes on merchandise or bar codes on the store shelf where the product is displayed, upon the product to be purchased or within a catalog, may be scanned to facilitate selection of desired items to be purchased. When the wireless telephone 18 is used to make purchases while away from the store, then a catalog 21 or any other source of bar codes may be utilized.

As each bar code is read, the purchase transaction program sends bar code data, such as SKU (Stock Keeping Unit) code or the Universal Product Code represented thereby, to the server and the server then preferably responds by sending a description and price for the product back to the wireless telephone 18, where the information is preferably shown upon the display 42 thereof. Also, the total price of items selected for purchase is preferably displayed.

Referring now to FIG. 2, the wireless telephone 18 and a store or remote server 10, 26 are shown in further detail. It should be appreciated that the store server 10 is generally identical to the remote server 26. However, the remote server 26 is located away from the store.

The wireless telephone 18 comprises a microprocessor 38 in communication with wireless telephone function electronics 40, display 42, keypad 44, input/output port 36, and IC card reader/writer 27. The microprocessor 38, wireless telephone function electronics 40, display 42, keypad 44, input/output port 36, and IC-card reader/writer 27 are all typical components of a contemporary wireless telephone.

Such a contemporary wireless telephone is added to an electronic shopping section 29, so as to facilitate the practice of the present invention. The electronic shopping section 29 comprises program loader 32 and program memory 34, all of which are in communication with microprocessor 38.

The input/output port 36 facilitates electrical communication between the microprocessor 38 and bar code scanner 20 via RS232C, USB, IEEE1394, IrDA or any other suitable interface 19.

The microprocessor 38 may be any conventional microprocessor or digital signal processor suitable for use in contemporary wireless telephone applications. The wireless telephone function electronics 40 comprise the electronics

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associated with the functions of a contemporary wireless telephone, such as telephone number memory, dialing, connect and disconnect circuitry, digital encoding (if used), radio frequency modulation and demodulation, and power amplification. The display 42 is typically an LCD display which displays the number being dialed, as well as various other optional information such as battery charge level, signal strength, individual call time and total call time. The keypad 44 is used to enter numeric, and optionally alpha, character information. The IC-card reader/writer 27 is used to read and write to an integrated circuit (IC) card which contains user account information and may be used with a plurality of different compatible wireless telephones, generally so as to facilitate billing to a desired customer. Thus, a first person may use his or her personal IC-card in a second person's cellular telephone to assure that a call is billed to the first program.

The electronic shopping section 29 comprises some of those components of the present invention which are added to a contemporary wireless telephone so as to facilitate electronic shopping according to the present invention. More particularly, the program loader 32 comprises a firmware memory which stores instructions for facilitating the download of the purchase transaction program from the server 10, 26. Instructions stored in the firmware memory of the program loader 32 are executed by microprocessor 38 after a call has been placed from the wireless telephone 18 to the server 10, 26 as discussed in detail below.

The program loader 32 optionally also comprises any desired circuitry which facilitates or enhances downloading of the purchase transaction program. Indeed, the program loader may optionally comprise only active circuitry rather than memory, if so desired. Such active circuitry is configured to respond to connection of the wireless telephone 18 to the server 10, 26 by effecting automatic download of the purchase transaction program without requiring that instructions be read from a memory.

Optionally, the program loader 32 comprises instructions, drivers, and/or circuitry which facilitates or enhances portions of the selection and/or payment processes. For example, the program loader 32 optionally contains drivers for the scanner 20 and/or IC card reader/writer 27.

Program memory 34 contains the purchase transaction program after it has been downloaded. This purchase transaction program is used by the purchaser to make product selections and to pay for purchased products.

The firmware memory of the program loader 32 comprises a non-volatile memory because the instructions stored therein do not change often. Conversely, the program memory 34 preferably comprises a volatile memory, since the purchase transaction program stored therein is downloaded for each use thereof.

Optional input/output port 36 facilitates communication with optional bar code scanner 20, so as to allow a purchaser to make product selections by scanning contemporary UPC bar codes 22, 31 (FIG. 1) or the like. The bar codes may be scanned from a catalog, a shelf within a store, the product itself, or any other desired location.

Optional IC card reader/writer 27 facilitates payment for purchased products via the use of an IC card or the like.

The server 10, 26 comprises a telephone interface 48 which is in communication with a customer information database 50, at least one download program memory 52 and a server personal shopping application 54.

The telephone interface 48 of server 10, 26 facilitates communication of the server 10, 26 with a telephone net-

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work and preferably comprises a conventional modem. Alternatively, the telephone interface 48 may comprise a cable modem, a network card, or any other device which facilitates communication with a commercial telephone system.

The customer information database 50 contains information regarding each customer's authorization to participate in electronic shopping.

The customer information database preferably comprises the phone number, telephone type, password, customer ID, customer name, and any other desired customer profile information, as shown in FIG. 9. The customer profile information may also contain credit information, shipping addresses, product interests, and/or prior shopping history.

The server 10, 26 retrieves caller's telephone number information from the customer information database 50 so as to determine download program ID from the download program memory 52 which is tailored specifically to the telephone of the purchaser.

The purchase transaction program which is downloaded from the download program memory 52 of server 10, 26 to a purchaser's wireless telephone 18 comprises instructions which facilitate the selection of products to be purchased and payment therefor. The purchase transaction program may either be identical for all purchasers or alternatively may be different for different individual purchasers or classes of purchasers, as desired.

When different purchase transaction programs are used for different customers, a download program ID may be associated with each different customer, in the customer information database (FIG. 9), so as to properly associate the desired download program with each customer.

It may be beneficial to provide different purchase transaction programs for different purchasers. For example, different purchase transaction programs may contain different languages, menus, options, methods for making selections, and/or methods for making payment for purchases. Further, different purchase transaction programs may optionally contain messages or advertisements of interest to particular purchasers. Thus, those purchasers who are interested in sports, for example, would receive news and/or advertisements related to sports activities.

The purchase transaction program may be written in any suitable programming language, such as Java, HTML or C++.

Since not all purchasers will necessarily have either a bar code scanner 20 or an IC card reader/writer 27, tailored purchase transaction programs may be provided to individual purchasers, so as to accommodate each individual purchaser's particular wireless telephone 18 and/or other electronic shopping devices, e.g., bar code scanner 20, IC card reader/writer 27. That is, if a particular purchaser does not have an IC card reader/writer 27, for example, then that portion of the purchase transaction program which facilitates operation of such an IC card reader/writer 27 may be omitted. Further, if the purchaser does not have an IC card reader/writer 27, and must therefore enter credit card information, i.e. account number and expiration date, via the keypad 44, then the purchase transaction program contains instructions for facilitating use of the keypad 44 to pay for the purchase of products. In this manner, the purchase transaction program is tailored to particular purchasers and the size of the purchase transaction program tends to be minimized by eliminating those portions of the program which are not to be used by a particular purchaser.

Alternatively, the purchase transaction program comprises instructions which facilitate all modes of operation of

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the wireless telephone 18 and any associated devices, e.g., bar code scanner 20, IC card reader/writer 27, etc. In this manner, a single, identical purchase transaction program is always downloaded to every purchaser, thereby simplifying the operation of server 10, 26. Of course, the disadvantage of such operation is that a larger purchase transaction program must be downloaded to the wireless telephone 18, thereby requiring more memory in the wireless telephone 18. The download of such a comprehensive purchase transaction program will also take longer.

Server personal shopping application 54 is a program which is stored at server 10, 26 and which facilitates operation of the server 10, 26 to perform electronic shopping. The server personal shopping application 54 facilitates the downloading of purchase transaction program to a wireless telephone 18 after the wireless telephone 18 has dialed server 10, 26 and established a connection therewith as discussed above. Server personal shopping application 54 also facilitates the receiving and processing of product selections made by a purchaser utilizing the wireless telephone 18 as discussed above. The server personal shopping application 54 also receives and stores payment information, such as credit card account numbers, expiration dates, etc. The server personal shopping application 54 also facilitates the reading and updating of information on a purchaser's IC card via IC card reader/writer 27, if utilized.

Optionally, server personal shopping application 54 performs billing functions, such as performing the necessary communications and transactions with credit card companies in order to facilitate the billing of purchasers by the credit card companies.

Referring now to FIG. 3, the receiver 110 of the wireless telephone 18 receives the purchase transaction program via the antenna 114 and the duplexer 112 and provides the purchase transaction program, according to the program load function 108 of the program loader 32 (FIG. 2) to program memory 34, where the loaded purchase transaction program 106 is stored so as to facilitate its execution via microprocessor 38 (FIGS. 2 and 4). Program load function 108 transfers control to the Loaded Purchase Transaction Program 106 upon completion of downloading. Then the Loaded Purchase Transaction Program 106 starts execution. During execution of the loaded purchase transaction program 106, the receiver 110 receives data from server 10, 26 (FIGS. 1 and 2) such as product descriptions and prices, and the transmitter 104 transmits information to the server 10, 26, such as Universal Product Codes and the quantity of each item ordered.

Optionally, the microphone 100 and the speaker 102 of the wireless telephone 18 may be utilized in a conventional manner to communicate with either a person or the server 10, 26 (via voice recognition and synthesis), such that verbal inquiries of the purchaser may be addressed while simultaneously performing purchase transactions. Thus, the wireless telephone processing functional electronics 40 are preferably configured such that voice and data may be intermixed during the purchasing process, when the wireless telephone 18 is in communication with the server 10, 26. In this manner, store advertisements and announcements may also be transmitted as voice from the server 10, 26 to the wireless telephone 18.

Referring now to FIG. 4, the wireless telephone 18 comprises call processing software 126, RF synthesizer 132, mixer 134, fixed oscillator 136, duplexer 112 and antenna 114, which operate as in contemporary wireless telephones. A transmitter 104 comprises analog to digital converter 120,

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speech coder 122, channel coder 124, modulator 128, and radio frequency amplifier 130 which operate according to well known principles. Further, the receiver 110 comprises digital to analog converter 140, speech decoder 142, channel decoder 144, equalizer 146, demodulator 148, and radio frequency receiver/amplifier 150 which also operate according to well known principles.

The electronic shopping section (29 of FIG. 2) which is added to a contemporary wireless telephone comprises program loader 32, loaded program 106 (which is stored within the program memory 34 of FIG. 2), and bar code scanner 20 optimally connected to the wireless telephone 18 via external input/output port 36. The added components, along with the data paths therefor, are shown in bold in FIG. 4.

The data path from the channel decoder 144 to the microprocessor 38 accommodates the communication of data from the server 10, 26 to the microprocessor 38 of the wireless telephone 18, such as during purchase transaction program downloading and execution of the purchase transaction program. The data channel from the microprocessor 38 to the channel coder 124 facilitates the communication of data from the microprocessor 38 to the server 10, 26 during execution of the purchase transaction program 106.

The data path from the analog to digital converter 120 to the microprocessor 38 accommodates the communication of voice data from the microphone 100 to the loaded program 106, such as voice command, menu selection by voice and/or purchased item selection by voice. The downloaded purchase transaction program optionally has voice recognition capability and voice data is recognized properly by the purchase transaction program in parallel with input from keyboard 44 and external bar code scanner 20. The data channel from the microprocessor 38 to the digital analog converter 140 facilitates the communication of voice data from the loaded program 106 to the speaker 102, such as voice/sound guidance and error message by voice. The downloaded purchase transaction program provides voice message to purchaser through speaker of the wireless telephone in parallel with message displaying on the display of wireless telephone. Also, voice data between the wireless telephone and the server may be transferred by the microphone/transmitter and receiver/speaker in parallel with transfer of non voice data and processing of the downloaded purchase transaction program.

As in contemporary digital wireless telephone communications, each message slot consists of both control signals and data. Control signals are used for transmission/reception control. According to contemporary practice, data is the digitized voice message transmitted by a person speaking over the wireless telephone 18. However, according to the practice of the present invention, such data comprises digital information representative of purchase selections, prices, quantities selected, etc., as well as optional voice data.

Thus, according to the present invention, the antenna 114 receives a radio frequency signal which comprises the purchase transaction program. The radio frequency receiver/amplifier 150 is coupled to receive the radio frequency signal from the antenna 114 and amplifies the radio frequency signal. The demodulator 148 is coupled to receive the amplified radio frequency signal from the radio frequency receiver/amplifier 150 and demodulates the amplified radio frequency signal. The equalizer 146 is coupled to receive the demodulated signal from the demodulator 148 and equalizes the demodulated signal so as to mitigate distortion thereof according to well known principles. The

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channel decoder 144 is coupled to receive the equalized signal from the equalizer 146 and separates non-speech digital data from the equalized signal. Thus, the channel decoder 144 separates the purchase transaction program from the equalized signal and communicates the purchase transaction program to the program memory 34 under the direction of the program loader 32.

Referring now to FIGS. 5-8, operation of the electronic shopping system of the present invention is discussed in detail.

With particular reference to FIG. 5, operation of the electronic shopping system of the present invention generally comprises calling 51 a server 10, 26 with a wireless telephone 18 so as to initiate communication between the wireless telephone 18 and the server 10, 26.

In making such a call, the purchaser merely dials the number of the server 10, 26 by the company from which the purchaser would like to make a purchase. The purchaser is typically unaware whether a store server 10 or a remote server 26 is being called. All operations performed by the purchaser are identical whether a store server 10 or a remote server 26 is called by the purchaser.

Once connection between the wireless telephone and the server is established, then a purchase transaction program is downloaded 53 from the server into the wireless telephone 18. The password is preferably authenticated by the downloaded purchase transaction program. Then, the purchase transaction program is used 55 to perform the desired purchase transactions.

With particular reference to FIG. 6, the step of calling 51 the server 10, 26 with the wireless telephone 18 comprises the steps of dialing 51a the server 10, 26 with the wireless telephone, the server 10, 26 answering 51b and using the telephone interface to communicate with the wireless telephone, the telephone interface obtaining 51c the wireless telephone's number, and the customer information database being searched 51d to provide the customer's telephone type, customer ID, and customer name. The customer ID and customer name are provided 51e by the telephone interface to the server 10, 26 personal shopping application.

Guidance may be provided to the user for manually entering an authorization number, password or the like via the keypad 44 using the display 42 of the telephone or alternatively, via voice instruction. This guidance is preferably provided by the loaded purchase transaction program 106. Alternatively, such guidance may be provided by the server 10, 26 or by store personnel who respond to either voice queries or keyboard entries. The password may be of any desired length.

According to the preferred embodiment of the present invention, two different checks are performed by the server 10, 26 to verify that the customer is an authorized customer. First, the telephone number of the wireless telephone 18 is checked to verify that the wireless telephone 18 is in the customer database and that the owner of the wireless telephone 18 is authorized to make purchase transactions. The customer's telephone number is preferably preregistered, and thus is present in the customer database, if the customer is a valid customer. Verification of the customer telephone number inhibits the making of unauthorized purchase transactions by people other than the authorized customer, e.g., by someone who is using a different wireless telephone.

After downloading of the purchase transaction program to the wireless telephone 18, then the customer may additionally be required to enter the authorization number or the password as discussed above. Both the telephone number

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and the password entered by the customer must be valid before purchase transactions are permitted. By requiring such an authorization number or password, the making of unauthorized purchase transactions by unauthorized persons using a stolen telephone is very effectively inhibited.

According to the preferred embodiment of the present invention, password authentication is performed by the downloaded purchase transaction program. Alternatively, password authentication is performed by the IC card or by the server 10, 26. Using the downloaded purchase transaction program to perform such password authentication provides desired flexibility and efficiency as compared with password authentication which is performed solely by the server 10, 26 or the wireless telephone 18, without use of the downloaded purchase transaction program. For example, the downloaded purchase transaction program may be configured so as to provide desired assistance in the entering of the password, such as providing instructions for doing so.

The call is made by dialing 51a the server's telephone number in a conventional manner. However the wireless telephone 18 may be placed in a program download mode prior to dialing the server's telephone number by either depressing a dedicated button upon the wireless telephone 18 or by entering a preselected code via the keypad 44 thereof. Alternatively, the wireless telephone 18 automatically begins downloading the purchase transaction program from the server 10, 26 upon connection. Such automatic downloading may be facilitated via a control signal, a code and/or header provided by the server 10, 26 which is recognized by channel decoder 144 and microprocessor 38 of the wireless telephone 18, so as to cause the wireless telephone 18 to receive and store the downloaded purchase transaction program according to instructions stored in the firmware memory of the program loader 32.

When a program load is initiated, the newly received purchase transaction program overwrites any previously received purchase transaction program stored in the program memory 34.

When the program load is completed, the program loader 32 transfers control to the loaded purchase transaction program (106 of FIG. 3). When the loaded purchase transaction program 106 program initiates execution, the purchase transaction program assumes control over input/output ports 36, keyboard 44, microphone 100 and/or attached devices, e.g., a bar code scanner 20 and/or an IC card reader/writer 27. The purchase transaction program 106 also assumes control over all transmit/receive functions of the wireless telephone. According to the preferred embodiment of the present invention, program data and voice data are combined so as to facilitate the ability to make voice inquiries while the purchase transaction program is being executed.

With particular reference to FIG. 7, the process of downloading 53a program from the server 10,26 into the wireless telephone comprises the steps of the server 10,26 transmitting 53b the desired purchase transaction program (which was selected based upon the user's telephone number) to the wireless telephone 18. The microprocessor of the wireless telephone 18 performs the download 53b of the purchase transaction program according to instructions stored in the program loader firmware. The downloaded purchase transaction program is stored 53c in the program memory. Then the downloaded purchasing transaction program requests 53d a password from the wireless telephone 18. The downloaded purchase transaction program preferably provides guidance for password entry and also provides authentication. Alternatively, the wireless telephone 18 transmits 53e

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the password to the server 10,26, and the server 10,26 authenticates 53f the password.

With particular reference to FIG. 8, once the purchase transaction program has been downloaded and stored in the program memory 34 of the wireless telephone 18, then a purchaser may select 68 items to be purchased. According to the preferred embodiment of the present invention, such selection 68 is effected by scanning UPC bar codes or the like with a bar code scanner 20. Those skilled in the art will appreciate various other codes, indicia, text, etc., may be scanned with various different scanning devices so as to facilitate the selection of items to be purchased. Further, those skilled in the art will appreciate that various other scanning technologies (different from UPC bar code scanning), such as electronic, magnetic, and optical technologies may be utilized to facilitate a product selection. For example, a magnetic tag or an electronic transponder may be placed upon the product, shelf, or within a catalog and may similarly be scanned to effect product selection.

Alternatively, product selections may be made by manually entering a UPC code, stock code or the like into the wireless telephone 18 via the keypad 44 thereof.

According to the preferred embodiment of the present invention, after each product is selected, a description of the product and the price thereof is shown in the display 42 of the wireless telephone 18. This information may comprise part of the purchase transaction program, or alternatively may be communicated from the server 10, 26.

According to the preferred embodiment of the present invention, the purchaser is given an opportunity to either confirm a purchase or to delete the item from the purchase list after each selection is made. The purchaser is preferably also given a choice to confirm or delete each purchase selection once all purchase selections have been made, prior to paying for the purchases.

According to the preferred embodiment of the present invention, the purchaser indicates that all desired purchases have been made by pressing a predetermined key of the keypad 44. The wireless telephone 18 then responds by displaying the total price of all purchases and also preferably provides an opportunity to delete purchases from the list as discussed above.

After all the items to be purchased have been selected 68, then the purchaser preferably pays 70 for the purchases with an IC card, credit card, check card, or the like. Alternatively, the purchaser may manually enter a credit card account number and expiration date or the like into the wireless telephone 18 via keypad 44.

Optionally, a customer may pre-register a credit card with the seller, such that purchases are automatically applied to the credit card account, thereby eliminating the need to enter credit card information or use an IC card or the like to effect payment for the purchased products.

When shopping is completed within a store, then payment may either be effected via the wireless telephone 18, as described above, or alternatively may be performed at the check out counter of the store. When payment is performed at the check out counter of the store, the information stored in the wireless telephone and/or the server 10,26 regarding purchases which have been made may be utilized to conveniently facilitate such payment by eliminating the need for a check out clerk to individually enter purchases.

Alternatively, when used in a store, the purchaser may check out by simply scanning a bar code at the check out counter. The scanned bar code indicates to the server 10, 26 the particular check out counter where the purchaser is

located. A list of the purchased items and their prices is then transmitted from the server to the check out counter where the purchaser is located and the purchaser pays a check out clerk for the purchased items in the desired manner, e.g., cash, check, credit card, IC card, etc.

When shopping in a store which utilizes a remote server 26, a purchaser may scan a bar code which indicates to the remote server 26 the store where the purchaser is shopping. This bar code may be displayed, for example, upon a shopping cart. The store location information is then used for inventory management of the purchased items at the store where the items are purchased.

When an IC card reader/writer 27 is utilized, then an electronic receipt for the products purchased may be stored in the IC card, if desired. The stored electronic receipts within the IC card may later be used to communicate personal financial information to a purchaser's home computer, so as to facilitate desired record keeping. If desired, a shopping history for the purchaser may be maintained within the IC card. As those skilled in the art will appreciate, the use of such an IC card further facilitates dual direction authentication, wherein authentication is provided both for customer validation and for server validation.

Optionally, an IC card may additionally be utilized to maintain customer profile data, which may be accessed by the server 10, 26, if desired.

The electronic shopping system of the present invention can be used to sell a variety of products and services. It may be implemented to facilitate transactions at either a wholesale or retail level. Indeed, the present invention may be utilized to perform a variety of different types of transactions, other than purchase transactions.

Referring now to FIG. 9, a customer information table is shown. The customer information table is stored as a database by the server and is accessed by the telephone interface 48 and the server personal shopping application 54. According to the preferred embodiment of the present invention, the customer information table stores phone numbers, telephone types, download program identification numbers, passwords, customer identification numbers, customer names, and any other desired customer profile information.

It is understood that the exemplary electronic shopping system described herein shown in the drawings represents only a presently preferred embodiment of the invention. Indeed, various modifications and additions may be made to such embodiment without departing from the spirit and scope of the invention. For example, those skilled in the art will appreciate that various types of wireless telephones, other than conventional cellular telephones, are suitable for the practice of the present invention. Also, various means of wireless communication (other than via a cellular telephone system) between the wireless telephone and the server are contemplated.

Moreover, the download program is not necessarily limited to purchase transaction applications. Any desired application program may similarly be downloaded to a wireless telephone by a program loader. Therefore any application program may be used by the wireless telephone. For example, the wireless telephone of the present invention may similarly be utilized for ticket reservation, seat reservation, food ordering, text/voice guidance, information inquiry, etc.

Thus, these and other modifications and additions may be obvious to those skilled in the art and may be implemented to adapt the present invention for use in a variety of different applications.

What is claimed is:

1. A program downloadable wireless telephone comprising:

a program memory for storing a downloaded transaction program;

a program loader comprising a firmware memory, the firmware memory containing instructions for downloading the transaction program from a server into the program memory;

a microprocessor for executing the instructions contained in the firmware memory of the program loader and for executing the downloaded transaction program stored in the program memory; and

a scanner in communication with the microprocessor for scanning product indicia of a product to be purchased.

2. An electronic transaction system comprising:

a server for storing a transaction program and for facilitating electronic transactions;

at least one wireless telephone for communicating with the server, the wireless telephone(s) comprising:

a program memory for storing a downloaded transaction program;

a program loader comprising a firmware memory, the firmware memory containing instructions for downloading the transaction program from a server into the program memory; and

a microprocessor for executing the instructions contained in the firmware memory of the program loader and for executing the downloaded transaction program stored in the program memory; and

a scanner coupled to the wireless telephone for scanning product indicia of a product to be purchased.

3. A program downloadable wireless telephone for facilitating performance of purchase transactions, the program downloadable wireless telephone comprising:

a program memory for storing a downloaded purchase transaction program;

a program loader comprising a firmware memory, the firmware memory containing instructions for downloading the purchase transaction program from a server into the program memory;

a microprocessor for executing the instructions contained in the firmware memory of the program loader and for executing the downloaded purchase transaction program stored in the program memory;

a bar code scanner in communication with the microprocessor for scanning bar codes which indicate products to be purchased; and

an IC card reader/writer in communication with the microprocessor for facilitating payment for products purchased.

4. An electronic shopping system for facilitating purchase transactions via a wireless telephone, the electronic shopping system comprising:

a server for storing a purchase transaction program and for facilitating electronic purchase transactions;

at least one wireless telephone for communicating with the server, the wireless telephone(s) comprising:

an antenna for receiving a radio frequency signal, the radio frequency signal comprising a purchase transaction program;

a receiver comprising:

a radio frequency receiver and/or amplifier coupled to receive the radio frequency signal from the antenna for amplifying the radio frequency signal;

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a demodulator coupled to receive the amplified radio frequency signal from the radio frequency receiver and/or amplifier for demodulating the amplified radio frequency signal;

a channel decoder coupled to receive a demodulated signal from the demodulator for separating non-speech digital data from the demodulated signal, the non-speech digital data comprising the purchase transaction program;

a program memory coupled to receive the purchase transaction program from the channel decoder for storing the purchase transaction program, and

a program loader for downloading a purchase transaction program from the server into the program memory; and

a scanner coupled to the wireless telephone for scanning product indicia of a product to be purchased.

5. The electronic shopping system according to claim 4, wherein the server is disposed proximate a store with which purchase transactions are performed.

6. The electronic shopping system according to claim 4, wherein the server is disposed at a location which is remote from the store with which purchase transactions are performed.

7. The electronic shopping system according to claim 4, further comprising an extension PBX in communication with the server for facilitating wireless communication between the server and the wireless telephone(s).

8. The electronic shopping system according to claim 4, wherein the program loader comprises a firmware memory.

9. The electronic shopping system according to claim 4, wherein the program loader comprises a firmware memory, the firmware memory containing instructions which are executed to effect storage in the program memory of the purchase transaction program received by the wireless telephone.

10. The electronic shopping system according to claim 9, wherein the wireless telephone further comprises a microprocessor in communication with the program loader and the program memory for executing the instructions stored within the firmware memory of the program loader and for executing the purchase transaction program stored within the program memory.

11. The electronic shopping system according to claim 10, wherein at least one of the wireless telephones further comprises an input and/or output port in communication with the microprocessor, to which the scanner is attachable.

12. The electronic shopping system according to claim 11, further comprising a catalog containing bar codes representative of items to be purchased, the bar codes being scannable by the scanner.

13. The electronic shopping system according to claim 10, wherein at least one of the wireless telephones further comprises an IC card reader/writer in communication with the microprocessor.

14. The electronic shopping system according to claim 4, further comprising:

a housing within which the program memory and the program loader are disposed, wherein the scanner is disposed substantially within the housing.

15. The electronic shopping system according to claim 4, further comprising:

a housing within which the program memory and the program loader are disposed; and

an IC card reader/writer disposed substantially within the housing.

16. A program downloadable wireless telephone comprising:

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an antenna for receiving a radio frequency signal, the radio frequency signal comprising a purchase transaction program;

a receiver comprising:

a radio frequency receiver/amplifier coupled to receive the radio frequency signal from the antenna for amplifying the radio frequency signal;

a demodulator coupled to receive the amplified radio frequency signal from the radio frequency receiver/amplifier for demodulating the amplified radio frequency signal;

a channel decoder coupled to receive a demodulated signal from the demodulator for separating non-speech digital data from the demodulated signal, the non-speech digital data comprising the purchase transaction program;

a program memory coupled to receive the purchase transaction program from the channel decoder for storing the purchase transaction program; and

a program loader for downloading the purchase transaction program from a server into the program memory; and

a scanner coupled to the receiver for scanning product indicia of a product to be purchased.

17. The program downloadable wireless telephone according to claim 16, wherein the program loader comprises a firmware memory.

18. The program downloadable wireless telephone according to claim 16, wherein the program loader comprises a firmware memory, the firmware memory containing instructions which are executed to effect storage of the purchase transaction program within the program memory.

19. The program downloadable wireless telephone according to claim 18, further comprising a microprocessor in communication with the program loader and the program memory for executing the instructions stored within the firmware memory of the program loader and for executing the purchase transaction program stored within the program memory.

20. The program downloadable wireless telephone according to claim 19, further comprising an input and/or output port in communication with the microprocessor, to which the scanner is attachable.

21. The program downloadable wireless telephone according to claim 19, further comprising an IC card reader/writer in communication with the microprocessor.

22. The program downloadable wireless telephone according to claim 16, further comprising:

a housing within which the program memory and the program loader are disposed, wherein the scanner is disposed substantially within the housing.

23. The program downloadable wireless telephone according to claim 16, further comprising:

a housing within which the program memory and the program loader are disposed; and

an IC card reader/writer disposed substantially within the housing.

24. A method for performing purchase transactions via a wireless telephone, the method comprising the steps of:

calling a server with the wireless telephone;

transmitting a radio frequency signal comprising a purchase transaction program to the wireless telephone, the radio frequency signal being received by an antenna of the wireless telephone;

amplifying the radio frequency signal received by the antenna to provide an amplified radio frequency signal;

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demodulating the amplified radio frequency signal to provide a demodulated signal;

separating the purchase transaction program from the demodulated signal; and

using a scanner in communication with the wireless telephone for scanning product indicia of a product to be purchased; and

transmitting the scanned product indicia to the purchase transaction program to perform a purchase transaction.

25. The method according to claim 24, wherein the step of storing the purchase transaction program comprises using a program loader to store the purchase transaction program.

26. The method according to claim 24, wherein the step of calling a server comprises calling a server disposed proximate a store where items are to be purchased.

27. The method according to claim 24, wherein the step of calling a server comprises calling a server disposed at a location remote from the store where items are to be purchased.

28. The method according to claim 24, wherein the step of calling a server comprises calling a server via an extension PBX.

29. The method according to claim 24 further comprising using an IC card reader/writer in communication with the wireless telephone to effect payment for a purchased item.

30. The method as recited in claim 24, further comprising the step of communicating by voice via the wireless telephone to make an inquiry about a product while the purchase transaction program is being executed.

31. The method as recited in claim 24, further comprising the step of transmitting a voice communication from the server to the wireless telephone while the purchase transaction program is being executed.

32. The method as recited in claim 24, wherein the step of transmitting a radio frequency signal comprises transmitting

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a purchase transaction program which is compatible with a plurality of different wireless telephone types.

33. The method as recited in claim 24, further comprising the step of:

5 determining a purchaser's telephone type by interrogating a database based on a caller's telephone number; and wherein the step of transmitting a radio frequency signal comprises transmitting a purchase transaction program which is tailored to the purchaser's telephone type.

34. The method as recited in claim 24, further comprising the step of:

determining a download purchase transaction program by interrogating a database based on caller's telephone number; and

wherein the step of transmitting a radio frequency signal comprises transmitting a purchase transaction program which is tailored to the purchaser's profile and/or preference, such as languages and interest.

35. The method as recited in claim 24, further comprising the step of having a server determine if a customer is a valid customer by verifying that a telephone number of the wireless telephone is an authorized pre-registered telephone number and subsequently allowing purchase transactions only if the telephone number is an authorized pre-registered telephone number.

36. The method as recited in claim 35, further comprising the step of having a server determine if a password entered by the customer into the wireless telephone is a valid password, the password being entered under control of the purchase transaction program, and allowing purchase transactions only if the password number is a valid password for the customer.

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**United States Patent** [19]  
**Simonoff et al.**

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[54] **UNIVERSAL CLIENT DEVICE FOR INTERCONNECTING AND OPERATING ANY TWO COMPUTERS**

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[52] **U.S. Cl.** ..... **345/335; 345/333; 709/203; 709/217; 709/221**

[58] **Field of Search** ..... **345/333, 334, 345/335, 331; 395/200.33, 200.5, 200.51, 200.52, 200.47, 200.48, 200.58, 200.57, 707/501, 513; 709/203, 220, 221, 222, 217, 218, 228, 227**

[56] **References Cited**

#### U.S. PATENT DOCUMENTS

4,617,663	10/1986	Lake et al.	371/25.1
5,386,568	1/1995	Wold et al.	395/700
5,544,335	8/1996	Motomura	395/311
5,581,558	12/1996	Horney, II et al.	370/401
5,590,281	12/1996	Stevens	395/200.01
5,732,219	3/1998	Blumer et al.	395/200.57
5,768,510	6/1998	Gish	395/200.33
5,790,117	8/1998	Halvati et al.	345/333
5,802,530	9/1998	Von Hoff	345/335
5,835,914	11/1998	Brim	395/200.33
5,848,246	12/1998	Gish	395/200.56

#### OTHER PUBLICATIONS

The Java Language Environment, James Gosling Henry McGilton, White Paper, pp. 52-59, May 1995.  
 Java in a Nutshell, David Flanagan, O'Reilly pp. 99-100, 239-241, May 1997.

Iona Technologies Introduces First Complete Internet Ready Java-CORBA Development Environment W/Orbix Web 3.0 Business Wire, Sep. 10, 1997.

Nevron Data Aims New Java Tools at Enterprise Developers, Apr. 9, 1997.

*Primary Examiner*—Raymond J. Bayerl

*Assistant Examiner*—Chadwick A. Jackson

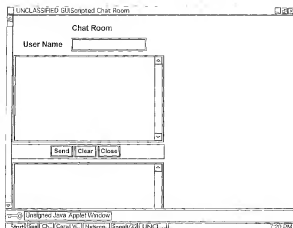
*Attorney, Agent, or Firm*—James B. Bechtel, Esq.; Robert A. Westerlund, Esq.; Raymond H. J. Powell, Jr. Esq.

#### [57] **ABSTRACT**

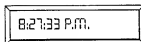
A Universal Client with a self-contained scripting language called GUIScript allows computing systems of varying architectures linked to the Internet or connected by an Intranet to run the same application software without modification or recompilation. Preferably, the computer system includes a computer architecture independent device for generating and displaying a graphic user interface (GUI) on a client computer operatively connected to a server computer. More specifically, the device includes elements for handling network protocols, for presenting a plurality of GUI objects to thereby form a GUI; for generating scripts defining respective ones of the GUI objects; for generating a GUIScript defining the GUI; for sending one of the scripts and the GUIScript; for receiving one of the scripts and the GUI script; and for scripting both behavior of a program responsive to operator interaction with one of the GUI objects and client-server commands unrelated to the GUI objects.

**18 Claims, 21 Drawing Sheets**

Microfiche Appendix Included  
 (1 Microfiche, 70 Pages)





*FIG. 1*

```
<script language="JavaScript">
<!-- Hide the script from old browsers--

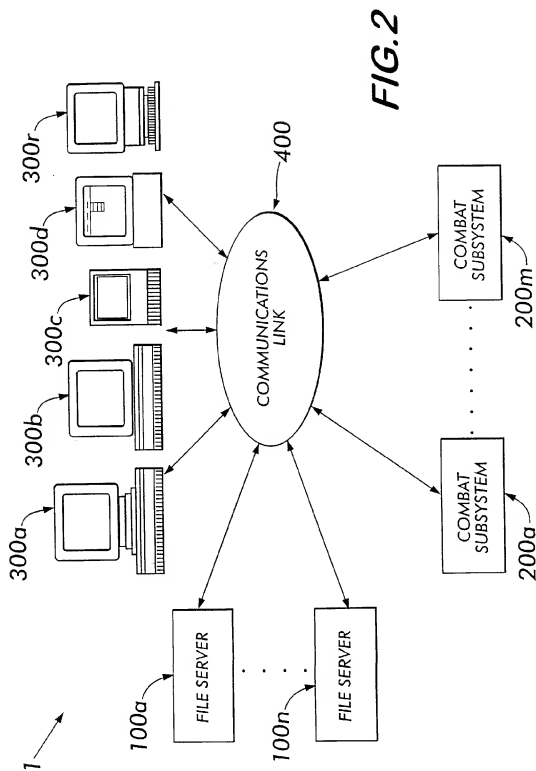
var timer ID = null;
var timerRunning = false;
var id,pause=0,position=0;

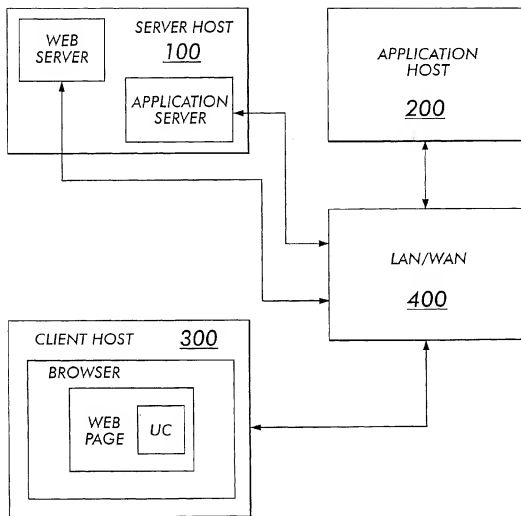
function stopclock (){
    if(timerRunning)
        clearTimeout(timerID);
    timerRunning = false;
}

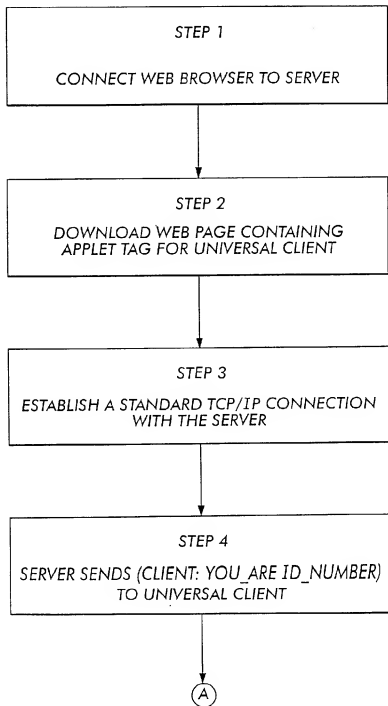
function showtime () {
    var now = new Date();
    var hours = now.getHours();
    var minutes = now.getMinutes();
    var seconds = now.getSeconds()
    var timeValue = "" + ((hours > 12) ? hours -12 :hours)
    timeValue += ((minutes < 10) ? ":0" : ":") + minutes
    timeValue += ((seconds < 10) ? ":0" : ":") + seconds
    timeValue += (hours >= 12) ? "P.M." : "A.M."
    document.clock.face.value = timeValue;
    timerID = setTimeout ("showtime()",1000);
    timerRunning = true;
}

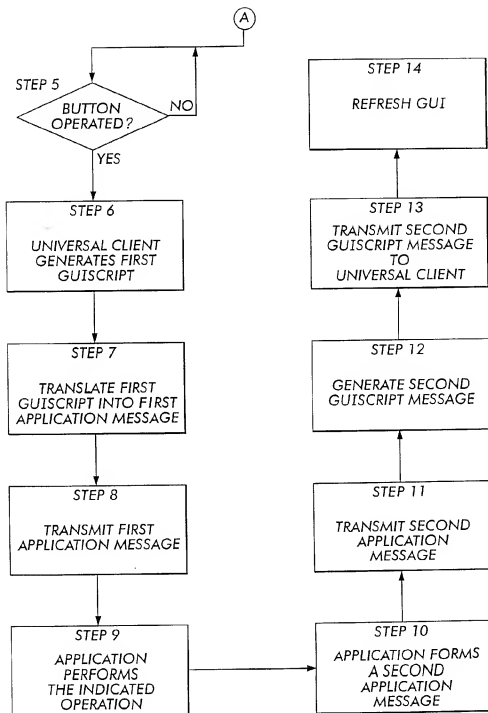
function startclock () {
    stopclock();
    showtime();
}

// --End Hiding Here -->
</script>
<body onLoad="startclock()">
<form name="clock" onSubmit="0">
<input type="text" name="face" size=13 value="">
</form>
```



*FIG. 3*

**FIG. 4**

**FIG. 5**

---

---

GUISCRIPT Syntax Diagram

---

---

// A COMMENT may appear anywhere except within an ATOM (or the HEADER).  
// COMMENTS do NOT nest!

COMMENT ::=

    `/\*`ANYTHING`\*/

    // (except `\*/`, which would signal the end of the COMMENT)

---

MESSAGE ::= // sent over the "net"  
    HEADER GUISCRIPT

GUISCRIPT ::=  
    GUISCRIPT\_ITEM\*

GUISCRIPT\_ITEM ::=  
    ACTION  
    NEW\_FRAME  
    (graphics KEY\_NAME GRAPHICS\_ARG\*) // KEY\_NAME is a CanvasPanel?  
    identifier

HEADER ::=

    #####

    // these eight one-byte characters are a string-representation of the  
    // length of the GUISCRIPT (in bytes).

    //

    // NOTE: We are planning to expand the size of the header to 32 bytes  
    // and give it a different format. The new header will include  
    // a byte of flags, three or four bytes indicating the message  
    // length, four bytes for the sender's "signature, a byte or two  
    // to identify the message "number", and possibly several bytes  
    // for validity (error) checking and an encryption key.

---

LET\_COMMAND ::=  
    ( let KEY\_NAME COMMAND\* )

**FIG. 6A**

// Run COMMANDs using KEY\_NAME as the target object.  
// Each COMMAND must be a legal action for KEY\_NAME's class.

```
NEW_FRAME ::=
  ( newFrame KEY_NAME QUOTED_STRING FRAME_ARG* )

FRAME_ARG ::=
  ADD_COMPONENT
  ( addDialog KEY_NAME QUOTED_STRING BOOLEAN DIALOG_ARG* )
  ADD_MENU
  ( addPanel KEY_NAME CONTAINER_ARG* )
  ( setCursor CURSOR )
  ( setResizable BOOLEAN )
  WINDOW_ARG

GRAPHICS_ARG ::=
  ( draw KEY_NAME spheric // KEY_NAME is a region identifier
    RANGE{0:359} RANGE{0:359} // min, max bearing (degrees)
    RANGE{0.0:256.0} RANGE{0.0:256.0} // min, max range (nm)
    RANGE{0:90} RANGE{0:90} // min, max elevation (degrees)
    COLOR
    DRAWSTYLE )
  ( draw KEY_NAME cylindric // KEY_NAME is a region identifier
    RANGE{0:359} RANGE{0:359} // min, max bearing (degrees)
    RANGE{0.0:256.0} RANGE{0.0:256.0} // min, max range (nm)
    RANGE{0.0:} RANGE{0.0:} // min, max height (nm)
    COLOR
    DRAWSTYLE )
  ( erase KEY_NAME )

COLOR ::=
  SYMBOL // a legal Java color name
  RANGE{0:255} RANGE{0:255} RANGE{0:255} // red, green, blue

DRAWSTYLE ::=
  solid
  wire

DIALOG_ARG ::=
  ( setResizable BOOLEAN )
  WINDOW_ARG

CONTAINER_ARG ::=
```

**FIG. 6B**

```
( addFrame KEY_NAME CONTAINER_ARG* )
( addPanel KEY_NAME CONTAINER_ARG* )
ADD_COMPONENT
( setLayout LAYOUT_MANAGER )
COMPONENT_ARG

ADD_COMPONENT ::=
( addButton KEY_NAME QUOTED_STRING COMPONENT_ARG* )
( addCheckbox KEY_NAME QUOTED_STRING CHECKBOX_ARG* )
( addLabel KEY_NAME QUOTED_STRING LABEL_ARG* )
( addCanvas KEY_NAME COMPONENT_ARG* )
( addCheckboxGroup KEY_NAME CHECKBOXGROUP_ARG* )
( addChoice KEY_NAME ""TITLES"" CHOICE_ARG* )
( addList KEY_NAME LIST_ARG* )
( addMultiState_Button KEY_NAME ""TITLES"" CHOICE_ARG* )
( addSeparator KEY_NAME SEPARATOR_ARG* )
( addTextArea KEY_NAME INTEGER INTEGER TEXTCOMPONENT_ARG* )
// the two INTEGER fields represent rows and columns
( addTextField KEY_NAME TEXTFIELD_ARG* )
( addScrollbar KEY_NAME ORIENTATION SCROLLBAR_ARG* )

CHECKBOX_ARG ::=
( setValue BOOLEAN ) // set initial value
COMPONENT_ARG

CHECKBOXGROUP_ARG ::=
( addCheckbox KEY_NAME QUOTED_STRING CHECKBOX_ARG* )
( setValue KEY_NAME ) // set initially pushed-in radio button

TITLES ::=
TITLE
TITLE/TITLES

TITLE ::=
ANYTHING AT ALL EXCEPT A "" OR "/"
"" QUOTED_STRINGS (without the quotes) separated by slashes,
// all enclosed in double-quotes

CHOICE_ARG ::=
( setValue QUOTED_STRING ) // set initial value
```

**FIG. 6C**



```
COMPONENT_ARG

COMPONENT_ARG ::=
  ( disable )
  ( enable )
  ( hide )
  ( move INTEGER INTEGER ) // (x,y) in parent's coord space
  ON_EVENT
  ( reshape INTEGER INTEGER INTEGER INTEGER ) // x,y, width, height
  ( resize INTEGER INTEGER ) // width, height in pixels
  RESIZE_PERCENT
  ( setBackground RANGE[0:255] RANGE[0:255] RANGE[0:255] ) // red green blue
  ( setConstraints CONSTRAINT* ) // no CONSTRAINTs sets constraints to default
  ( setBorderLayoutLocation BORDER_LAYOUT_LOCATION ) // for BorderLayouts
  SET_FONT
  ( setForeground RANGE[0:255] RANGE[0:255] RANGE[0:255] ) // red green blue
  ( setReportable BOOLEAN )
  ( show )
  ( validate )
  ACTION

ACTION ::=
  ( print ATOM* ) // prints ATOMs to stdout
  ( sleep INTEGER INTEGER? ) // milliseconds + optional nanoseconds
  ( storeScript SCRIPT* )
  LET_COMMAND
  REPORT
  GET_FILE
  STORE

SCRIPT ::=
  ( KEY_NAME COMMAND* )

LABEL_ARG ::=
  ( setAlignment ALIGNMENT )
  COMPONENT_ARG

LIST_ARG ::=
  ( addItem QUOTED_STRING )
  ( insertItem QUOTED_STRING INTEGER ) // INTEGER is position of item in list
  ( clear )
  ( makeVisible INTEGER ) // position to be made visible
  ( select INTEGER ) // position to be selected
```

**FIG. 6D**

```
( setMultipleSelections BOOLEAN )  
COMPONENT_ARG  
  
SCROLLBAR_ARG ::==  
  ( setLineIncrement INTEGER )  
  ( setPageIncrement INTEGER )  
  ( setValue INTEGER )  
  ( setValues INTEGER INTEGER INTEGER INTEGER ) // value, visible, min, max  
  COMPONENT_ARG  
  
STORE ::==  
  ( storeScript KEY_NAME ACTION* )  
  // Store ACTIONs under KEY_NAME. The ACTIONs are executed when  
  // KEY_NAME is invoked as the first (usually only) atom in a COMMAND  
  // (e.g., when triggered by an event).  
  
TEXTCOMPONENT_ARG ::==  
  ( setEditable BOOLEAN )  
  ( setText QUOTED_STRING* )  
  COMPONENT_ARG  
  
TEXTFIELD_ARG ::==  
  ( setEchoCharacter CHARACTER )  
  TEXTCOMPONENT_ARG  
  
SEPARATOR_ARG ::==  
  ( setEtching ETCHING )  
  ( setConstraints CONSTRAINT* ) // no CONSTRAINTs sets constraints to default  
  
WINDOW_ARG ::==  
  ( dispose )  
  ( pack )  
  ( show )  
  ( toBack )  
  ( toFront )  
  CONTAINER_ARG  
  
KEY_NAME ::==  
  SYMBOL // an identifier for a component. This symbol MUST  
  // BE UNIQUE among all "sibling" components within its  
  // parent container. A globally_unique identifier for
```

**FIG. 6E**

// this component is constructed by appending its  
// KEY\_NAME to that of its parent, with the two symbols  
// separated by a greater-than (>) character. Thus for  
// a component in a nested hierarchy, its global key might  
// be SomeFrame>SomePanel>SomeCheckboxGroup>SomeCheckbox

ATOM ::=

QUOTED\_STRING

NUMBER

SYMBOL

QUOTED\_STRING ::=

"ANYTHING AT ALL EXCEPT A DOUBLE-QUOTE"

NUMBER ::=

FLOAT

INTEGER

RANGE[NUMBER:NUMBER] // min:max allowed values for RANGE

RANGE[NUMBER:] // min allowed value for RANGE

RANGE[:NUMBER] // max allowed value for RANGE

SYMBOL ::=

// an unquoted string containing any characters except

// " () `/\*^>\*/ and whitespace

BOOLEAN ::=

true

false

ON\_EVENT ::=

(onEvent EVENT\_ID ACTION\*)

EVENT\_ID ::= // not all EVENT\_IDs are triggered by all components

'ACTION\_EVENT'

'CHECKBOX\_OFF'

'CHECKBOX\_ON'

'GOT\_FOCUS'

'KEY\_ACTION'

'KEY\_ACTION\_RELEASE'

'KEY\_PRESS'

'KEY\_RELEASE'

**FIG. 6F**

'LIST\_DESELECT'  
'LIST\_SELECT'  
'LOAD\_FILE'  
'LOST\_FOCUS'  
'MOUSE\_DOWN'  
'MOUSE\_DRAG'  
'MOUSE\_ENTER'  
'MOUSE\_EXIT'  
'MOUSE\_MOVE'  
'MOUSE\_UP'  
'SAVE\_FILE'  
'SCROLL\_ABSOLUTE'  
'SCROLL\_LINE\_DOWN'  
'SCROLL\_LINE\_UP'  
'SCROLL\_PAGE\_DOWN'  
'SCROLL\_PAGE\_UP'  
'WINDOW\_DEICONIFY'  
'WINDOW\_DESTROY'  
'WINDOW\_EXPOSE'  
'WINDOW\_ICONIFY'  
'WINDOW\_MOVED'

COMMAND ::=

// A COMMAND is an action-name, optionally followed by arguments,  
// in a format described in this document, all surrounded by ().  
// The COMMAND is performed upon the local (enclosing) object.

RESIZE\_PERCENT ::=

(resizePercent RANGE{0:100} RANGE{0:100} )  
// width, height as a percent of container size

ETCHING ::=

'OUT'  
'IN'

CONSTRAINT ::=

( anchor ANCHOR\_VALUE )  
( fill FILL\_VALUE )  
INSETS  
( GRID INTEGER )  
( GRID 'RELATIVE' )  
( GRID 'REMAINDER' )  
( IPAD INTEGER )

**FIG. 6G**

```
( WEIGHT FLOAT )

ANCHOR_VALUE ::=
    'CENTER'
    'NORTH'
    'NORTHEAST'
    'EAST'
    'SOUTHEAST'
    'SOUTH'
    'SOUTHWEST'
    'WEST'
    'NORTHWEST'

ORIENTATION ::=
    'HORIZONTAL'
    'VERTICAL'

FILL_VALUE ::=
    'NONE'
    'BOTH'
    ORIENTATION

GRID ::=
    gridx
    gridy
    gridwidth
    gridheight

IPAD ::=
    ipadx
    ipady

WEIGHT ::=
    weightx
    weighty

SET_FONT ::=
    ( setFont SYMBOL STYLE INTEGER ) // SYMBOL is the font's name
                                     // INTEGER is the point size

STYLE ::=
    'BOLD'
    'ITALIC'
```

**FIG. 6H**

```
'PLAIN'

GET_FILE ::=
  ( getFile SYMBOL* )
  // treats each SYMBOL as a file name and reads 'em in

LAYOUT_MANAGER ::=
  GridBagLayout
  XYLayout
  BorderLayout

ADD_MENU ::=
  ( addMenu KEY_NAME QUOTED_STRING ACTION* )

MENU_ITEM ::=
  ADD_MENU
  ( addMenuItem KEY_NAME QUOTED_STRING ACTION* )
  ( addMenuItemSeparator KEY_NAME )
  ( addCheckboxMenuItem KEY_NAME QUOTED_STRING CHECKBOX_ACTION* )

CHECKBOX_ACTION ::=
  ( 'CHECKBOX_OFF' ACTION* )
  ( 'CHECKBOX_ON' ACTION* )

CURSOR ::=
  'CROSSHAIR_CURSOR'
  'DEFAULT_CURSOR'
  'E_RESIZE_CURSOR'
  'HAND_CURSOR'
  'MOVE_CURSOR'
  'N_RESIZE_CURSOR'
  'NE_RESIZE_CURSOR'
  'NW_RESIZE_CURSOR'
  'S_RESIZE_CURSOR'
  'SE_RESIZE_CURSOR'
  'SW_RESIZE_CURSOR'
  'TEXT_CURSOR'
  'W_RESIZE_CURSOR'
  'WAIT_CURSOR'

ALIGNMENT ::=
  'CENTER'
  'LEFT'
```

***FIG. 6I***

'RIGHT'

BORDER\_LAYOUT\_LOCATION ::=

North

South

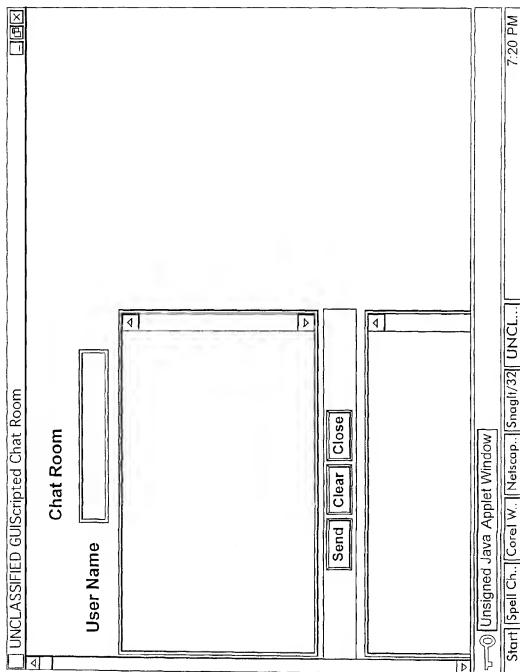
East

West

Center

***FIG. 6J***

FIG. 7





```
guiscript
(newFrame mainFrame 'UNCLASSIFIED GUIScripted Chat Room'
  (setLayout GridBagLayout)
  (setBackground gray)
  (addScrollerPanel Scroller
    (setConstraints (gridwidth 127)
      (gridheight 127)
      (gridx 1)
      (gridy 1))
    (setBackground gray)
    (setLayout XYLayout)
    (addPanel TitlePanel
      (setConstraints (gridx 1)
        (gridy 10))
      (setBackground gray)
      (setLayout FlowLayout)
      (addLabel title '*** Chat Room ***'
        (setFont 'Helvetica" BOLD 20)
      )
    )
  )

  (addPanel UserPanel
    (setConstraints (gridx 1)(gridy 20))
    (setBackground gray)
    (setLayout FlowLayout)
    (addLabel Name 'User Name'
      (setFont 'Helvetica' BOLD 18)
    )
    (addTextField UserName
      (setEditable true)
      (setFont 'Helvetica" BOLD 18)
      (setText '
    )
  )
)

  (addTextArea ChatToSend 10 40
    (setEditable true)
    (setFont 'Helvetica" BOLD 18)
    (setConstraints (gridx 1)
      (gridy 30)
      (fill HORIZONTAL))
  )
)
```

**FIG. 8A**

```
(addPanel ButtonPanel
  (setConstraints (gridx 1)(gridy 40))
  (setBackground blue)
  (setLayout FlowLayout)

  (addButton SendButton 'Send'
    (setFont 'Helvetica' BOLD 18)
    (setBackground gray)
    (onEvent ACTION_EVENT
      (send 'createFile' chat.log)
      (send 'writeFile' {getValue mainFrame>Scroller>UserPanel>UserName}:
        '{getValue mainFrame>Scroller>ChatToSend}')
      (send 'closeFile' {getValue mainFrame>Scroller>UserPanel>UserName}:
        '{getValue mainFrame>Scroller>ChatToSend}')
      (send 'broadcast' {getValue mainFrame>Scroller>UserPanel>UserName}:
        '{getValue mainFrame>Scroller>ChatToSend}')
    )
  )

  (addButton ClearButton 'Clear'
    (setFont 'Helvetica' BOLD 18)
    (setBackground gray)
    (onEvent ACTION_EVENT (let mainFrame>Scroller>ChatToSend(clear)))
  )

  (addButton CloseButton 'Close'
    (setFont 'Helvetica' BOLD 18)
    (setBackground gray)
    (onEvent ACTION_EVENT (let mainFrame (hide)))
  )
)

(addTextArea ChatMsgs 10 40
  (setEditable false)
  (setFont 'Helvetica' BOLD 18)
  (setConstraints (gridx 1)
    (gridy 50)
    (fill HORIZONTAL))
)
)
(pack)
)
```

**FIG. 8B**

```
(onReceipt broadcast
  (let mainFrame>Scroller>ChatMsgs
    (appendText (getValue broadcast))
    (appendText '\n')
  )
)

(let loadingLabel (hide))
(let StartIDEA (enable true))
```

*FIG. 8C*

```
/* $Id: DeltaTimer.java,v 1.1 1997/01/22 16:20:25 tmcint exp $ */
import java.io.*;

/*****
**
** class DeltaTimer-
**
** a class for timing code execution BETWEEN mark() calls
**
*****/
public final class DeltaTimer extends Timer
{
    public DeltaTimer()
    {
        super();
    }

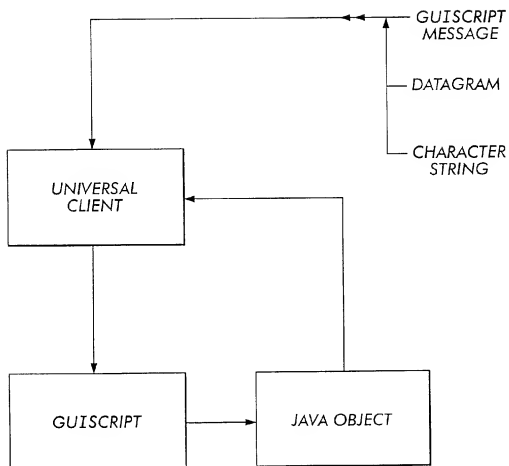
    public void mark()
    {
        super.mark();
        starttime = System.currentTimeMillis();
    }

    public static void main(String[] args)
    {
        DeltaTimer t1 = new DeltaTimer();

        for (long i = 0; i < 200000; i++);
        t1.mark();
        System.out.println(t1.elapsed());
        for (long i = 0; i < 200000; i++);
        t1.mark();
        System.out.println(t1);
        for (long i = 0; i < 200000; i++);
        t1.mark();
        System.out.println(t1);

        // for (long i = 0; i < 22000000; i++);
        // t1.mark();
        // System.out.println("time: " + t1);
    }
} // end class DeltaTimer
```

**FIG. 9**

**FIG. 10**

# 1 **UNIVERSAL CLIENT DEVICE FOR INTERCONNECTING AND OPERATING ANY TWO COMPUTERS**

## STATEMENT OF GOVERNMENT INTEREST

The invention described herein was made in the performance of official duties by employees of the Department of the Navy and, thus, the invention disclosed herein may be manufactured, used, licensed by or for the Government for governmental purposes without the payment of any royalties thereon.

## BACKGROUND OF THE INVENTION

The present invention relates to the field of distributed computer systems. More specifically, the present invention relates to a virtual machine or device that facilitates interoperability between two or more computers included in the computer system. According to one aspect of the present invention, a pair of software devices enables two or more dissimilar computers to run the same exact software program without modification or recompilation of the software program.

A source code microfiche appendix having one slide consisting of 70 frames is appended hereto. The code listed in the microfiche appendix details one implementation of the Universal Client device described herein.

Several services within the U.S. Military often need to interoperate, i.e., interact and communicate, with one another to carry out Joint Missions. More specifically, the participants in a Joint Mission must be able to share information including text data, images, and, more importantly, various computer generated displays of consolidated tactical information.

It will be appreciated that the various components of the U.S. Military use a heterogeneous collection of computers running a wide variety of operating systems, e.g., MS-DOS, Windows 3.1, Windows-95, Windows-NT, O/S-2, Macintosh O/S, and several versions of UNIX. The number of different systems which must be interconnected varies with each Joint Mission, making it extremely difficult for the components of the U.S. Military to interoperate. In particular, it is extremely difficult for the various military components to share a homogeneous view of tactical information. The degree of difficulty is often increased when the various military components are physically separated from one another over long distances. Although communication channels are available to interconnect the various computers, wide geographic separation generally dictates the use of a narrow band communications link.

Military components can share text data, maps and/or photographs used in conveying tactical data, after a fashion, even when using dissimilar computers. For example, map data may be displayed using a particular computer program, assuming that a version of the particular computer program tailored to run on each variation of the individual computers forming a computer system is available. It should be mentioned, however, that each branch of the service often uses branch-specific symbols in displaying information; the Army may designate ground troops using one symbol while the naval vessels providing fire support may use a completely different symbol to represent the identical ground troops. Moreover, the U.S. Military is often required to expend manpower and funds to generate a computer program for each variation of computer used in the Joint Mission.

It will be appreciated that the foregoing discussion assumes that several versions of the same program can be

installed on the various computers being networked to one another; the problem is exacerbated when the computer systems which must be networked are running incompatible operating systems. For example, the Joint Mission parameters often dictate that a UNIX computer acting as a server, i.e., the computer providing data, be interconnected to various desktop computer and workstation clients, i.e., the computers receiving the data, which clients are running several other incompatible operating systems.

The advent of the Internet, and particularly the World Wide Web (the Web), has provided at least two technical advances which promise to preserve the investment made by large computer operators such as the U.S. Military in hardware, software and training. In particular, these two technical advances provide techniques for distributing applications, or pseudo-applications within hypertext markup language (HTML) documents sent by the server to at least one client over the public Internet or a private Intranet. The latter case will be discussed first.

It is now possible for servers to provide clients with HTML documents having expanded capabilities by virtue of their use of a scripting language such as JavaScript, i.e., a limited programming language designed to extend the capabilities of another application. For example, the numerical clock illustrated in FIG. 1 was generated by the JavaScript routine also illustrated in FIG. 1. The JavaScript routine is downloaded to a client running an appropriate JavaScript Interpreter, which causes the client computer to display, by way of another example, an order form (not shown) in the downloaded Web page. It will be appreciated that the data generated using the JavaScript form is transferred to a common gateway interface (CGI) program in the conventional manner.

Alternatively, the server may provide clients with JAVA™ applications (Applets) embedded into the HTML document. It will be appreciated that a JAVA™ Applet is a small program which can be run automatically as soon as the associated HTML document is transferred from the server to the client(s); several JAVA™ Applets may be transferred to a client within a single HTML document.

It should be mentioned that JAVA™ Applets are compiled applications just as word processing programs are compiled applications. The programmer generates the needed JAVA™ program and then compiles the program using a dedicated JAVA™ Compiler. Errors in the program code will require debugging, as in any compiled program. Once the program has been compiled, the program is stored on the server and a corresponding tag is inserted into the HTML document which will eventually be used to transfer the JAVA™ Applet from the server to the client(s). After the HTML document is transferred, the JAVA™ Applet is invoked and starts to run on a JAVA™ Virtual Machine associated with a JAVA™ enabled Web browser on the client(s).

Thus, current technology is moving away from fat clients, i.e., full programs, to thin clients, i.e., JAVA™ Applets. The principal advantage to the latter approach is in program configuration control, i.e., just the server side program is updated; the client automatically receives the latest version, for example, of the JAVA™ Applet when the associated HTML document is transferred to the client(s). However, the programmer must still develop one or more new JAVA™ Applets for each server application being run. Thus, for a server storing several different databases needed during a Joint Mission, the programmer must write at least one JAVA™ Applet so that the client(s) can effectively interface with each database. Moreover, when the data is not simple

alphanumeric data, it may be necessary for the programmer to develop specific versions of the JAVA™ Applets for each command, each service branch, etc., so that branch-specific symbology can be displayed.

In short, an unacceptable amount of time and money is still required to ensure interoperability between the participants of the Joint Mission, even after moving from the fat client approach to the thin client approach to facilitate configuration control. Although one could rely solely on JavaScript for simple data presentation applications, the capabilities of JavaScript would quickly be exhausted. While the JavaScript-enhanced Web pages save programming time over the programming of JAVA™ Applets, principally because JavaScript-extended HTML documents do not require repeated compilation and debugging, the number of serious applications which can be performed solely by means of a JavaScript-extended HTML document is severely limited. Thus, JAVA™ applets and JavaScript-extended HTML documents occupy two different ends of the spectrum of GUI presentation options. JAVA™ applets must be compiled for each platform and, thus, do not provide an avenue to significant cost savings while permitting decreased development time. JavaScript-extended HTML documents, while eliminating compilation time and the shortening development cycle, are incapable of providing versatile GUIs for presenting complex information to a wide variety of diverse computers.

What is needed is a computer network or system wherein various military components can use the same computer program and share information beyond the visualization of a map, text or photograph regardless of variations in the individual components of the system. Moreover, what is needed is a practical device which enables each military component to quickly and easily personalize the client, i.e., user, front end, which front end presents graphical user interface (GUI) objects to the user, without the need to modify the same software program application used by all of the other military components connected to the same network. In short, what is needed is a computer system and corresponding method of operation wherein the Government achieves military component interoperability and cost savings irrespective of computer variation and architecture.

#### SUMMARY OF THE INVENTION

Based on the above and foregoing, it can be appreciated that there presently exists a need in the art for a computer system and corresponding operating method which overcomes the above-described deficiencies. The present invention was motivated by a desire to overcome the drawbacks and shortcomings of the presently available technology, and thereby fulfill this need in the art.

One object according to the present invention is to provide a computer system for interconnecting various military components efficiently. According to one aspect of the present invention, the computer system advantageously permits military components to use the same computer program and share information beyond the visualization of a map, text or photograph regardless of variations in hardware and software between the networked computers. According to another aspect of the invention, a dedicated scripting language enables each military component to quickly and easily personalize the user front end, which presents the GUI objects, without modifying the same software program application used by all networked military components. Thus, the Government simultaneously achieves military component interoperability and cost savings regardless of computer variation and architecture.

Another object according to the present invention is to provide a computer system whereby research scientists designing systems employing simulation-based design technology are permitted to run simulations and visualize the results regardless of computer variation. According to one aspect of the present invention, the computer system according to the present invention beneficially permits geographically dispersed users to access a central database, to run simulations, and to receive simulation results. According to yet another aspect of the present invention, the received simulation results advantageously are displayed as directed by the user.

Still another object of the present invention is to provide a device which advantageously enables application programmers to quickly and easily script application program behavior without requiring modification to the device.

Yet another object of the present invention is to provide an interface development method which advantageously enables application programmers to quickly and easily script application program behavior without requiring concurrent modification to the application program.

Therefore, one object of the present invention is to provide a computer system whereby computer users are able to interoperate with one another irrespective of any variation between the individual computers forming the computer system.

Another object of the present invention is to provide a computer system whereby computer users are permitted to interoperate with one another using a single computer software application program. According to one aspect of the present invention, the single computer program advantageously can be operated by all users substantially unchanged, i.e., without modification or recompilation.

Yet another object of the present invention is to provide a computer system formed from relatively incompatible components which is capable of presenting shared information to all users regardless of vehicle or platform.

Moreover, another object of the present invention is to provide a computer system permitting computer users to interoperate regardless of their geographic location.

Another object of the present invention is to provide a computer running a dedicated computer program wherein the behavior of the computer program can be modified responsive to a program-specific scripting language.

Additionally, it is an object of the present invention to provide a method for recycling computer software. It will be appreciated that this aspect of the present invention was motivated by a desire to save money on, i.e., minimize, software expenditures. Thus, the same software, e.g., software module, can be used repeatedly even though the GUI varies over several generations; changing the GUIScript changes the GUI presented to the operator.

Furthermore, another object of the present invention is to provide a method for creating user front end graphical user interfaces (GUIs) suitable for networked database applications.

Still another object of the present invention is to provide a method suitable for creating user front end GUIs to facilitate networked classroom training. According to one aspect of the present invention, one of the objects included in the GUI advantageously can be a player for displaying video information, which information can be either live, i.e., a real time video display, or prerecorded. According to another aspect of the present invention, the GUI advantageously is capable of displaying several objects simulta-

neously; a MultiMedia object can be displayed while an associated page of a service manual is retrieved and displayed in a text window. According to yet another aspect of the present invention, the GUI advantageously can be used to control the browser directly.

Yet another object of the present invention is to provide a method suitable for creating user front end GUIs to facilitate interaction between two or more clients via a server. According to one aspect of the present invention, the degree of interaction between the servers can be predetermined using GUIScript.

As still further object of the present invention is to provide a computer system for displaying GUI objects generated by a Universal Client program responsive to a dedicated scripting language.

Still another object of the present invention is to provide a device which is both computer architecture independent and responsive to a dedicated scripting language.

Yet another object of the present invention is to provide a computer architecture independent method for creating user front end GUIs for networked applications displaying information in the form of 3-D graphics.

Another object of the present invention is to provide a computer architecture independent method for creating user front end GUIs for networked applications implementing an expert system.

A further object of the present invention is to provide a computer architecture independent method for creating user front end GUIs for networked applications which could not otherwise interoperate.

Moreover, another object of the present invention is to provide a computer architecture independent method for creating user front end GUIs for networked applications which are server source code language independent.

Still another object of the present invention is to provide a computer architecture independent method for creating user front end GUIs for networked applications compatible with industry Transmission Control Protocol/Internet Protocol (TCP/IP) standards.

Moreover, additional objects of the present invention are to provide a computer system and a computer architecture independent method for creating user front end GUIs for networked applications while reducing software creation, distribution, maintenance and support costs, preserving investments in legacy hardware, improving software reuse, providing architecture independence of dedicated display consoles, improving system survivability and availability (since any single console can perform same the function as any other console), and reducing the cost of new hardware.

These and other objects, features and advantages according to the present invention are provided by a computer architecture independent device for generating and displaying a graphic user interface (GUI) on a client computer operatively connected to a server computer. Preferably, the device includes elements: for handling network protocols; for presenting a plurality of GUI objects to thereby form a GUI; for generating scripts defining respective ones of the GUI objects; for generating a GUIScript defining the GUI; for sending one of the scripts and the GUIScript; for receiving one of the scripts and the GUI script; and for scripting both behavior of a program responsive to operator interaction with one of the GUI objects and client-server commands unrelated to the GUI objects.

These and other objects, features and advantages according to the present invention are provided by a computer

system permitting interoperation between first and second computers irrespective of hardware and/or operating system differences between the first and second computers. Preferably, the first computer includes a first storage device storing a document written in hypertext markup language (HTML), the HTML document including an applet tag for invoking a Universal Client device and computer readable instructions for generating the Universal Client device, and a first communications device permitting the HTML document and the computer readable instructions for generating the Universal Client device to be downloaded to a second computer. Moreover, the second computer includes a second storage device storing computer readable instructions for permitting the second computer to utilize a World Wide Web browser providing a JAVA™ virtual machine, a second communications device permitting the second computer to receive the HTML document and the computer readable instructions for generating the Universal Client device provided by the first computer, and a processor for initializing and executing the Universal Client device on the second computer using the JAVA™ virtual machine to thereby generate predetermined graphical user interface (GUI) objects and display the GUI objects on the second computer.

These and other objects, features and advantages according to the present invention are provided by a computer system generating a graphical user interface (GUI) on a first computer corresponding to a presentation generated on a second computer irrespective of the operating system differences between the first and second computers, wherein the first computer includes a first device for responding to a string for invoking the GUI, the first device running on a JAVA™ virtual machine; and wherein the second computer includes an additional device for generating the string.

These and other objects, features and advantages according to the present invention are provided by a computer system generating a graphical user interface (GUI) on a first computer screen corresponding to a presentation generated with respect to a second computer screen irrespective of the operating system differences between the respective first and second computers, includes:

- a first device for providing a hypertext markup language (HTML) document including an applet tag corresponding to a Universal Client device;
- a second device for initializing and executing the Universal Client device using a JAVA™ virtual machine;
- a third device for parsing and interpreting a script associated with the Universal Client device to thereby cause the Universal Client device to display the GUI; and
- a fourth device for generating the script for causing the Universal Client device to display the GUI.

Additional objects, advantages and novel features of the invention will become apparent to those skilled in the art upon examination of the following description or may be learned by practice of the invention. The objects and advantages of the invention may be realized and attained by means of the instrumentalities and combinations particularly pointed out in the appended claims.

#### BRIEF DESCRIPTION OF THE DRAWINGS

These and various other features and aspects of the present invention will be readily understood with reference to the following detailed description taken in conjunction with the accompanying drawings, in which like or similar numbers are used throughout, and in which:

FIG. 1 is an illustration of a computer screen depicting an object generated using the JavaScript scripting language and the corresponding JavaScript code listing;



FIG. 2 is a high-level block diagram of a computer system according to the present invention;

FIG. 3 is a high-level block diagram of selected components of the computer system according to the present invention illustrated in FIG. 2, which illustrates the operation of one of the several alternative operation techniques permitted by the present invention;

FIG. 4 is a flowchart of the start-up sequence of the computer system according to the present invention illustrated in FIG. 3;

FIG. 5 is a flowchart illustrating the basic operating steps of the computer system according to the present invention illustrated in FIG. 3;

FIGS. 6A-6I collectively constitute a listing of the dedicated scripting language interpreted by the Universal Client device in displaying graphical user interface (GUI) objects according to the present invention;

FIG. 7 is an illustration of a computer screen showing the output of an exemplary application using the Universal Client device;

FIGS. 8A-8C collectively denote the dedicated scripting language listing for producing the computer screen illustrated in FIG. 7 using the Universal Client device according to the present invention;

FIG. 9 is a listing of the dedicated scripting language for causing the Universal Client device according to the present invention to perform a timing function; and

FIG. 10 is a high level block diagram illustrating the interaction paths between the Universal Client device and an object in a class library in response to various stimuli.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

One of the principal objects of the present inventions, although certainly not the only one, is to provide a Universal Distributed Display Capability (UDDC) for operating substantially all military applications on any commercial off the shelf (COTS) based system supporting a JAVA™ enabled browser. A preferred embodiment of the present invention accomplishes this objective through a software application written in JAVA™ called the Universal Client device. The Universal Client device advantageously understands a scripting command language called GUIScript. Beneficially, the Universal Client device can present any desired graphical user interface (GUI), including MultiMedia, for any application, through description of the desired GUI in GUI-Script. As will be discussed in greater detail below, the Universal Client device advantageously includes an advanced multi-threading architecture and an interactive 3-D library in addition to the traditional window controls one has come to expect in a graphical environment.

The Universal Client device goes far beyond conventional JAVA™ programming. For example, the Universal Client device advantageously can take the local client screen resolution into account. Moreover, the Universal Client device preferably provides information on the operating system running on the client to permit tailoring of the behavior of the provided GUIScript to the running platform. The Universal Client device additionally facilitates networking. In addition, the Universal Client device also has the ability to launch applications on the local client machine when run in a stand alone mode, i.e., without using a browser. Moreover, the Universal Client device is capable of true multitasking, i.e., capable of displaying and/or controlling multiple objects in parallel.

The Universal Client device and GUIScript according to the present invention allows the Government to solve software portability and interoperability problems and, thus, satisfy all of the following goals:

- a. Display tactical information on any vendor's modern commercial equipment without modification of the client or legacy software;
- b. Permit a battle unit to view any other units' displays even if the other unit uses different display hardware;
- c. Bring on-line a tactical display on a low-end machine, e.g., a laptop computer running Windows, to maintain system availability during critical operations such as air traffic control;
- d. Reduce software management and porting costs; and
- e. Deliver a technology for providing training both afloat and ashore, independent of the system on which training is being provided and independent of the training facilities available.

A preferred embodiment of the present invention will now be described while referring to FIG. 2, which illustrates a computer system 1 in high-level block diagram form. Preferably, computer system 1 includes servers 100a through 100m, combat subsystems 200a through 200m, and computers 300a-300r. All of the servers 100a-100m, the combat systems 200a-200m and the computers 300a-300r advantageously are operatively connected to one another via a communications link 400.

In an exemplary case, servers 100a-100m are UNIX systems while the combat systems 200a-200m advantageously can be systems such as radar systems, status boards, etc. Preferably, each of the machines 100a-100m and 200a-200m include a processor, working memory, a storage device such as a hard disk and a communications device, e.g., a network interface card. It should also be mentioned that computers 300a-300r can include desktop computers, laptop computers and/or workstations in any mix. Advantageously, these computers can include a central processing unit, a graphic display processor, the graphic display device, e.g., monitor, a communications device and several memories including both solid state memories, i.e., random access memory (RAM) and a hard disk drive. Preferably, link 400 is a local area network (LAN), although the link 400 advantageously can be a wide area network (WAN) or other interconnection facility such as a frame-based satellite network or even the Internet. Thus, although a JAVA™ enabled web browser is a preferred platform for initiating the Universal Client device according to the present invention, connection to the Internet or World Wide Web is NOT required. The computer system 1 advantageously can be a detached local area network or intranet for practical and security reasons. In an exemplary case, the browser running on one of the clients 300a-300r merely accesses one of the servers 100a-100m in order to launch the Universal Client device.

It will be appreciated that the present invention was developed in response to perceived problems in the interoperability of legacy computer hardware used in combat systems and networks and solved those problems. However, since the ramifications and applications of the present invention go far beyond the interoperability of combat system hardware, the discussion which follows will use appreciably broader terminology in describing the system and corresponding operating methods according to the present invention.

Referring specifically to FIG. 3, a computer system 1 according to the present invention includes a server host

100, an application host 200, and a client host 300, all of which are interconnected to one another via a LAN or WAN 400 (hereinafter LAN 400). It will be appreciated that LAN 400 advantageously can be any communication channel capable of interconnecting the various distributed components of the computer system 1. Preferably, the server host 100 provides both a Web server and an application server, as discussed in greater detail below. The application host 200 advantageously can be another computer running a predetermined program needing to be accessed by the user operating client host 300. Client host 300 beneficially provides a JAVA™ enabled web browser, a web browser implementing a JAVA™ virtual machine, while the Web server on server host 100 stores a web page and associated Applet tag. Thus, using the Applet paradigm, the Universal Client device preferably is embedded as an Applet tag in a World Wide Web page. When the downloading of the web page from the server host 100 to the client host 300, i.e., the web browser on the user's computer, is completed, the web browser identifies the Universal Client device to be downloaded to the user's computer via the World Wide Web server. After the Universal Client device loads, it initializes and runs.

During initialization, the Universal Client device searches the HTML code in the downloaded web page to determine if the Universal Client device has been given GUIScript parameters. In an exemplary case, the Universal Client device can identify the parameters listed in Table 1.

TABLE 1

Parameter	Action
GUIScript	Read, parse and process GUIScript scripting language commands embedded or referenced in the HTML code of the web page containing the Universal Client device's Applet tag.
HostName/Port	Establish a standard TCP/IP socket connection to the server given by "HostName" and connect on the identified logical port number given by "Port."

The Universal Client device advantageously can process the "GUIScript" parameters and then the "HostName/Port" parameters. It should be mentioned that when the Universal Client device is required to establish a standard socket connection per one of the aforementioned parameters, then another host server program, in addition to the web server, must exist to host the socket connection and communicate with the Universal Client device via GUIScript. It should also be mentioned that the use of both of the listed parameters is optional.

When the Universal Client device on client host 300 runs, it will connect to the Application Server running on server host 100. Moreover, the Universal Client device will load and interpret a GUIScript file which defines all the display windows and their operation for the application running on application host 200. The Universal Client device will then display the appropriate GUI to the user. The user can then run the application via the Universal Client device, which will transfer data to the application via the intermediate Application Server running on server host 100. It will be appreciated that the Application Server advantageously can translate the application specific message traffic to a format compatible with the Universal Client device, i.e., GUIScript. Preferably, multiple ones of the clients 300a-300r illustrated in FIG. 2 may be connected to Application Server running on server host 100. In short, the combination of a JAVA™ enabled web browser and the Universal Client device advantageously allows any COTS-based client host to operate the application running on application host 200.

A detailed discussion of the start-up sequence of the computer system according to the present invention will now be provided. As illustrated in the flowchart of FIG. 4, the client host 300 establishes communication with server host 100 via LAN 400 during step 1. More specifically, a JAVA™ enabled web browser, i.e., a web browser running a JAVA™ virtual machine, operating on client host 300 connects to the web server running on server host 100 via LAN 400. It will be appreciated from the discussion that at least one of the web pages residing on or reachable through server host 100 includes the Universal Client device embedded in the web page as an Applet tag. Step 1 is completed when the web page with the embedded Universal Client device is selected.

During step 2, the web page including the Universal Client device and any associated GUIScript is downloaded, in an exemplary case, from server host 100 to the web browser running on client host 300 via LAN 400. As previously mentioned, after the Universal Client device has been downloaded to client host 300, the Universal Client device initializes and runs. During initialization, the Universal Client device searches the HTML code in the downloaded web page to determine if the Universal Client device has been given GUIScript parameters. Whether or not GUIScript is provided, the Universal Client device interprets the indicated GUIScript and prepares and projects the scripted GUI onto the screen of the client host 300.

For purposes of the discussion which follows, it will be assumed that the Universal Client device running on client host 300 will connect to an application server running concurrently on server host 100. Preferably, the application server permits the user to control an application which is actually running on application host 200, as will be discussed in greater detail below. However, it will be appreciated that the client host 300a advantageously can establish a connection to server host 100r, instead of server host 100a, when the GUIScript downloaded from server host 100a includes the Uniform Resource Locator (URL) pointing to server host 100r of FIG. 2. Moreover, it will be appreciated that the client host 300 need not be connected to a server host at all. For example, the client host 300 advantageously could be used to download and display a training session to the user, which session could include audio and video clips or timed GUIScripts designed to replay a predetermined sequence of graphical images, provided that the training materials were available to the Universal Client device on client host 300. Additional alternatives will suggest themselves to those of ordinary skill in the art and all such alternatives are considered to be within the scope of the present invention.

Returning to the flowchart of FIG. 3, the Universal Client device running on client host 300 advantageously establishes a TCP/IP socket connection with the application server running on server host 100. It will be appreciated that the Universal Client device advantageously can read, parse and process the GUIScript commands embedded or referenced in the HTML code of the web page containing the Applet tag for the Universal Client device. As mentioned previously, the client host running the Universal Client device establishes a standard TCP/IP socket connection to the server host identified by "HostName" and will connect to that server host on the identified logical port number given by "Port." In the exemplary case being discussed, the client host 300 establishes a standard TCP/IP connection with server host 100 during step 3.

It should be mentioned here that the Universal Client device has a well-defined Application Programming Inter-

face (API) to provide a definition for interfacing a server to the Universal Client device. The Universal Client device contains a parser and processor module for executing GUIScript. The server host **100** advantageously contains a parser and processor module for executing GUIScript to the extent necessary to facilitate meaningful communications with the Universal Client device on client host **300**. The server host **100** preferably is responsible for defining the application for the Universal Client device. The server host **100** advantageously can be built from technology different from that used in creating the Universal Client device.

After the Universal Client device on the client host **300** establishes the Transmission Control Protocol/Internet Protocol (TCP/IP) socket connection, the host server **100** immediately responds, in an exemplary case, to the Universal Client device with the characters "(Client:you\_are id\_number)," where id\_number is a unique 8-digit integer, during step **4**. It will be appreciated that a computer-generated server host socket hascode value is generally recommended for id\_number, since it is guaranteed to be unique and since it identifies the logical socket connection between the server host **100** and the client host **300** running the Universal Client device. It should be mentioned that the server host **100** advantageously can selectively send GUIScript to multiple client hosts **300a-300r**, as shown in FIG. 2, by filtering the id\_number.

It should be mentioned at this point that any number of the multiple client hosts **300a-300r** can be interactively connected to one another either by LAN **400** alone or through server **100** via LAN **400**. Thus, client hosts **300a** and **300b** can be directly connected to one another so that the users can communicate with one another. FIGS. 7 and 8, which are discussed in greater detail below, illustrate an exemplary chat room which can be established between two or more users. It should also be mentioned that a single client host **300a** advantageously can be connected to, for example, multiple application hosts **200a-200m** so that the GUI displayed using the Universal Client device includes data generated by several different application hosts **200a-200m**. Of course, when referring to combat system applications, several client hosts **300a-300r** preferably display the data generated by the application hosts **200a-200m**, although each of the client hosts **300a-300r** may display received information filtered through a unique GUI.

It will be appreciated that the purpose of the "Client:you\_are" message is to provide the Universal Client device with a unique identifier such that the server host **100** can distinguish which of the client hosts **300a-300r** is sending GUIScript transmissions and positively identify which one of the client hosts **300a-300r** will receive a GUIScript message from server host **100** via LAN **400**. From this point on, any data sent from the Universal Client device will be appended with the client id\_number. Once the Universal Client device has the client id\_number, the next communication may be initiated by either the Universal Client device on the client host **100** or the server host **300**. Each communication advantageously can be in the form of GUIScript, although the present invention is not limited Universal Client device which are responsive to GUIScript messages. It should be mentioned that the Universal Client device advantageously can respond to other stimuli such as an ASCII character string and datagram.

The Universal Client device beneficially can be made interactive to a character string by employing, for example, a so-called "wait-for" command which causes the Universal Client device to respond in a predetermined way when a character string having a specified format is received. Thus,

the Universal Client device can process information from a data base application in an exemplary case. Although the preceding discussion has been with respect to display of GUI objects using the Universal Client device, it should be mentioned that the present invention is not so limited. The Universal Client device advantageously controls objects, e.g., JAVA™ objects, which objects need not be displayed or even displayable to the user. For example, the object implemented on the Universal Client device advantageously may receive the results of a data base query and translate the received data into another format particularly suited to yet another object.

Preferably, GUIScript can instantiate any GUI object common between Microsoft Windows, X-Windows and the JAVA™ "awt" graphics library. Additionally, GUIScript can instantiate the Universal Client's 3-D graphics visualization object as part of the GUI front end. Advantageously, GUIScript also defines the action that occurs when a GUI object is operated by the user. For example, GUIScript defines what the application program running on application server **200** does when the user clicks a particular button on the graphical user interface of the client host **300**. It will be appreciated that operation of the GUI-button can be used to send a command back to the host server **100**, which command may be directed to the server host **100** and/or the application host **200**, open another window, or both. Thus, any number of actions may be performed responsive to the operation of a GUI-button, i.e., when the button is clicked. The actions, called "events," beneficially are defined in the GUIScript language.

The interactions between the client host **300**, the server host **100** and the application host **200** will now be discussed while referring to the flowchart of FIG. 5, which flowchart illustrates the overall operation of the computer system **1** illustrated in FIG. 3. The connection functions provided by LAN **400** are substantially transparent to the user and, for that reason, will be ignored. It will be noted that the steps **1-4** in the flowchart of FIG. 4 must have been completed before initiating the steps depicted in FIG. 5.

During step **5** of FIG. 5, the Universal Client device running on client host **300** repeatedly performs a check to determine whether one of the buttons on the GUI has been operated, i.e., clicked. When the answer is negative, the check repeats. However, when the answer is affirmative, the Universal Client device, in an exemplary case, generates a first GUIScript message and transmits the first GUIScript message to the application server running on server host **100** during step **6**. When the first GUIScript message is received, step **7** is performed to translate the first GUIScript message into a first application message. It will be appreciated that the first application message is in a format suitable for parsing and interpretation by the application running on application host **200**. The first application message is then transmitted by the application server on server host **100** to the application running on application host **200** during step **8**.

The application performs the operation indicated in the first application message during step **9** and then forms a second application message during step **10**. It will be appreciated that this second application message often includes information denoting a change in the appearance of the GUI displayed on client host **300**. During step **11**, the second application is transmitted from application host **200** to server host **100**. In response to the second application message, the application server running on server host **100** generates a second GUIScript message during step **12**. The second GUIScript message is then transferred to the Universal

Client device on client host **300** at step **13** and is subsequently used by the Universal Client device in generating a refreshed GUI during step **14**.

It will be noted that the actual operation of the computer system **1** employing the Universal Client device, which is responsive to the GUIScript written in the GUIScript scripting language, can be much more complex than the rudimentary operation steps illustrated in FIG. **5**. For example, it will be noted that the effect of the operation of a single button on the GUI running on client host **300a** can eventually be reflected in the GUI running on client host **300b**, i.e., in the computer system **1** illustrated in FIG. **2**. Moreover, an application such as a radar system advantageously can generate data which will eventually arrive at the Universal Client device running on client host **300** in the form of an incoming GUIScript message even though a corresponding outgoing GUIScript message was not generated.

In summary, objects, functions and advantages according to the present invention are provided by a computer executing a Universal Client device responsive to a GUIScript written in the GUIScript scripting language. Additional details regarding the GUIScript scripting language, as well as several illustrative examples will now be presented while referring to FIGS. **6A** through **9**.

The GUISCRIPT Syntax Diagram illustrated in FIGS. **6A-6I** consists of definitions, each of which has a "left-hand side" (LHS) and a "right-hand side" (RHS). Each definition is made up of "tokens". A token is a group of characters meant to be used as a unit. In the Syntax Diagram (FIGS. **6A-6I**), tokens are separated by "whitespace" (tabs, spaces and/or line-feeds), though that is not always necessary in an actual GUIScript. Only when two adjacent tokens are entirely made up of alphanumeric characters is intervening whitespace necessary.

It will be appreciated that the GUIScript Syntax Diagram follows standard Backus-Naur Form (BNF) notation, which is a preferred notation for the formal description of programming languages. While BNF notation is most commonly used to specify the syntax of "conventional" programming languages such as Pascal and C, BNF notation advantageously can be used in command language interpreters and other language processing.

Advantageously, there are three kinds of tokens: "nonterminals"; "terminals"; and "comments". Nonterminals are spelled using all UPPER/CASE characters and underscores (**\_**), and are never quoted. Comments are described in the Syntax Diagram, but are identical to the two types of JAVA™ or C++ comments. In contrast, a terminal is any token that isn't a comment or a nonterminal. In addition, some characters are used as "metatokens", which are explained in greater detail below.

Preferably, the LHS consists of exactly one nonterminal and a "neck". It always begins in the first column of a definition. The neck, represented by the characters ":", "=", separates the nonterminal from the RHS. Advantageously, the RHS consists of one or more "replacement rules", each rule generally appearing on a separate line below the LHS. It will be noted that multi-line replacement rules are separated by the "|" character. Moreover, a replacement rule is made up of one or more terminals and/or nonterminals. It will be noted that a few nonterminals, e.g., "ANYTHING", are not defined; the GUIScript developer can determine what these represent.

In order to make a GUIScript, it is preferable to start with either a nonterminal GUISCRIPT or a MESSAGE (and/or comments). Then replace each nonterminal with the text for exactly one of the nonterminal's replacement rules; perform

this operation on the result recursively until there are no nonterminals remaining.

With respect to Metatokens, opposing single quotes ('and') are used to "escape" the characters they delimit. The enclosed characters are meant to be taken literally, rather than as a nonterminal or metatoken. It will be appreciated that the single quotes are not part of the token. Other canons of GUIScript construction are as follows:

- a. A pound-sign (#) represents a single digit character ('0' through '9');
- b. The ampersand (&) represents an alphabetic character, either upper- or lower-case;
- c. A question mark (?) after a token indicates that it occurs at most once;
- d. A plus (+) after a token indicates that it must occur at least once;
- e. An asterisk (\*) after a token indicates that it may occur zero or more times;
- f. Brackets ( [ and ] ) are used to group tokens to enable one of the two preceding metatokens to operate on the group as if it were a single token. A bracketed group without a trailing metatoken denotes that the group of tokens is optional;
- g. If an optional token or group has a default value, it is enclosed in angle-brackets (< and >) immediately after the token or group;
- h. A range of numbers is represented by {MIN-MAX}. One of the numbers may be missing; in that case, the range has no minimum/maximum. The type of number expected—integer or floating point—is indicated by the format of the number. Incidentally, an integer number may be used in place of a floating point number, but not the reverse. A floating point number whose absolute value is less than one is not required to have a leading zero;
- i. Comments about items in the syntax diagram begin with "/\*" and go to the end of the line.

In order to better appreciate both the power and the ease of using the GUIScript command language, an exemplary computer screen is depicted in FIG. **7** while the corresponding GUIScript for generating that screen, which in this particular case is the front end for a so-called chat room, is listed in FIGS. **8A-8C**, collectively. It will be appreciated that the GUIScript shown in FIGS. **8A-8C** is parsed and interpreted by the Universal Client device, which then generates the chat room GUI for display on the client host **300**. A complete listing for an exemplary Universal Client device is provided in the attached Appendix. As discussed above, several clients **300a-300r** advantageously can communicate among themselves using, in an exemplar case, the chat room paradigm. It will be appreciated that the Universal Client device listing is an exemplar, and not a limiting, preferred embodiment of the present invention.

In the discussion above, it was generally assumed that the GUIScript executed by the Universal Client device on the client host **300** was stored on server host **100**; this is but one of several possibilities. As mentioned previously, while an exemplary preferred embodiment of the Universal Client device is delivered over the World Wide Web, the Universal Client device advantageously can be executed on a single client host **300**; thus, the default startup HTML document includes either a URL specifying that the Universal Client device is stored on the client host **300** or the GUIScript employed by the Universal Client device on startup. Alternatively, the GUIScript can be stored either on server host **100** or application host **200**. It should be mentioned, in the latter case, that it will be necessary to establish another

TCP/IP between the client host **300** and the server host **100**, so as to facilitate ultimate connection to application host **200**. When the GUIScript is started on server host **100**, the TCP/IP connection used in downloading the Universal Client device will suffice.

Referring now to FIG. 10, it should be mentioned that the Universal Client device was specifically developed to interpret objects, most preferably JAVA™ objects, although any GUI object common between Microsoft Windows, X-Windows and the JAVA™ "awt" graphics library can be employed. As shown in FIG. 10, the Universal Client device, which advantageously may include modules (discussed below), interprets JAVA™ objects. Advantageously, the Universal Client device can interpret a JAVA™ object directly or can interpret a JAVA™ object under the direction of a GUIScript. In the preferred embodiment discussed above, the object is controlled through GUIScript. It will be appreciated that the Universal Client device responds to any or all of GUIScript messages, datagrams and character strings. Moreover, the Universal Client device advantageously may respond to CORBA Object Request Broker (ORB) calls. CORBA provides a communication infrastructure for invoking operations on objects transparently with respect to where they are located on the network, the types of hardware and operating system platforms on which they execute, differences in data representations between platforms, the languages in which objects are implemented, and network transports used to communicate with them. CORBA specifies all of the functions that must be provided by an ORB and a set of standard interfaces to those functions.

As mentioned immediately above, the Universal Client device preferably can be configured as several stand alone modules to conform to the development environment to the developers particular needs as well as to increase the execution speed of the Universal Client device. For example, when a sophisticated developer, who is familiar with the process of writing objects directly, employs the Universal Client device, that developer may have no need for GUIScript. In that case, the GUIScript interpretive module need not be included with the Universal Client device. Thus, the Universal Client device advantageously can be optimized based on the particular need of the GUI developer.

One potential application for a computer system employing the Universal Client device employing a GUIScript according to the present invention is an automated weapon doctrine conflict resolver called the Intelligent Doctrine Engagement Architecture (IDEA). IDEA includes: a client: which provides the user with a graphical user interface, e.g., 3-D graphics, and receives user inputs; a server, which processes the received user inputs to produce instructions in the format required by an expert system to resolve conflicts in doctrine and to produce the GUIScript needed to display the expert system output on the client; and the aforementioned expert system. For IDEA, the Universal Client, 3-D graphics, server and expert system are preferably written in the JAVA™ programming language by Sun Microsystems. The Universal Client device advantageously runs as an Applet in any JAVA™-enabled World Wide Web browser.

Another potential application of a computer system employing the Universal Client device with a GUIScript according to the present invention is the simulation-based design database for the so-called Leading Edge Advanced Prototyping for Ships (LEAPS). LEAPS includes a client, which provides the user with a graphical user interface, e.g., graphics, and produces GUIScript-formatted user inputs, and a server, which processes user inputs and outputs

additional GUIScripts to the client. For LEAPS, the Universal Client device and graphics are written in the JAVA™ programming language by Sun Microsystems. The LEAPS server software and database are advantageously written in C++. Beneficially, since the Universal Client device process an JAVA™ object in any JAVA™-enabled World Wide Web browser, hardware capable of running the JAVA™ virtual machine can be used as the client in the LEAPS computer system.

Although the present invention has been discussed in terms of the JAVA™ programming language, it will be appreciated that other programming languages advantageously may be employed. For example, the Universal Client device may be provided by software algorithms written in the Python programming language and executed via a Python interpreter. It should be mentioned that the Universal Client according to the present invention can run as a stand-alone application or as an Applet in any JAVA™-enabled World Wide Web browser, i.e., the choice of the JAVA™ programming language is completely arbitrary. Any architecture independent supported language, such as Python, could be used. A common embodiment of the Universal Client is as an Applet because of the readily available World Wide Web browser Hypertext Markup Language (HTML) interface. It will also be appreciated that the Universal Client device may be provided by dedicated integrated circuits or programmable logic devices instead of software.

Thus, the Universal Client device and corresponding operating method provides the mechanism to remove requirements for specific embedded display capabilities from any distributed system architecture. Although current distributed systems may include proprietary complex software designs tailored to closely coupled display technologies, the Universal Client device advantageously opens the system architecture by decoupling the embedded display software from the distributed system. It will be appreciated that the Universal Client device and corresponding operating method provides the capability to distribute any graphical user interface (GUI) to any commercial off the shelf (COTS) based display console in an architecture independent way. In particular, the Universal Client device and corresponding method according to the present invention permit server-based applications to be simultaneously presented on COTS systems, e.g., Windows-based PCS, Silicon Graphics Incorporated (SGI) Unix workstations, etc. This paradigm also allows the Government to separate the distributed system into functional components to thereby simplify system upgrades and data fusion for improved intelligent agent automation. It should also be mentioned that this capability advantageously can be used during both retrofitting and upgrading existing systems.

It should also be noted that the GUIScript-responsive Universal Client device is not limited to displaying objects forming the GUI for the client host **300**. As previously mentioned, the GUIScript advantageously can be used to command playback of MultiMedia files, e.g., audio and video files. According to one aspect of the present invention, the Universal Client device advantageously can display several objects simultaneously, e.g., a MultiMedia object can be displayed while an associated page of a service manual is retrieved and displayed in a text window. According to yet another aspect of the present invention, the GUI advantageously can be used to control the browser directly to facilitate multi-threaded operations.

Additionally, objects can be written to perform other functions such as timing the duration between two events.

For example, JAVA™ objects advantageously can be generated to measure the elapsed time between the display of predetermined information on the client host **300** and the user's response to the predetermined information. Moreover, another JAVA™ object can be used to measure system performance, e.g., time duration be generation of a datagram and display of information corresponding to the datagram on the GUI. An exemplary JAVA™-sourced object for a so-called DeltaTimer is illustrated in FIG. 9. One of ordinary skill in the art will immediately perceive many operations of the Universal Client device which could beneficially employ the DeltaTimer. For example, the DeltaTimer advantageously could be used in training applications to determine the elapsed time between the display of an object and the user's operation of the GUI in response to that particular displayed object. Moreover, system performance advantageously can be timed using the DeltaTimer GUIScript within a larger GUIScript.

As previously mentioned, the Universal Client device does not necessarily generate a GUI to display all information relayed to the Universal Client device. This feature advantageously can be used in implementing a more robust computer system. In an exemplary case, all applications passing information to the Universal Client device as, for example, GUIScript messages and/or datagrams beneficially can provide so-called "heart beats" to the Universal Client device. In the event that the heart beat corresponding to a particular application ceases, the Universal Client device advantageously can attempt to connect to the application via secondary route. Alternatively, the Universal Client device can drop the connect to that application and establish a connection to a back-up application host. Thus, the Universal Client device can be configured to automatically connect to a machine running a needed application without user interaction.

Moreover, information on each user such as screen preferences advantageously may be stored at a remote location, e.g., server host **100**. In the event that the user's client terminal **300** malfunctions, the user can reestablish a connection to the server host **100** using another client machine and the Universal Client device with present the user with his particular GUI preferences. Thus, the user who routinely connects using a PC having a relatively low resolution screen could reestablish a connection via a workstation with a high resolution screen. The user need only execute a so-called "resize %" command to adjust the GUI to a screen size better suited to the high resolution display.

Other modifications and variations to the invention will be apparent to those skilled in the art from the foregoing disclosure and teachings. Thus, while only certain embodiments of the invention have been specifically described herein, it will be apparent that numerous modifications may be made thereto without departing from the spirit and scope of the invention.

What is claimed is:

1. A computer architecture independent device for generating and displaying a graphic user interface (GUI) on a client computer operatively connected to a server computer, comprising:

- means for handling network protocols;
- means for presenting a plurality of GUI objects to thereby form a GUI;
- means for generating scripts defining respective ones of said GUI objects;
- means for generating a GUIScript defining said GUI;
- means for sending one of said scripts and said GUIScript;

means for receiving one of said scripts and said GUI script;

means for selectively parsing and processing said GUIScript and said script to thereby display said GUI; and means for scripting both behavior of a program responsive to operator interaction with one of said GUI objects and client-server commands unrelated to said GUI objects.

2. A computer system permitting interoperation between first and second computers irrespective of hardware and/or operating system differences between the first and second computers, wherein:

said first computer comprises:

- a first storage device storing a document written in hypertext markup language (HTML), said HTML document including an applet tag for invoking a Universal Client device and computer readable instructions for generating said Universal Client device; and
- a first communications device permitting said HTML document and said computer readable instructions for generating said Universal Client device to be downloaded to a second computer; and

said second computer comprises:

- a second storage device storing computer readable instructions for permitting said second computer to utilize a World Wide Web browser providing a JAVA™ virtual machine;
- a second communications device permitting said second computer to receive said HTML document and said computer readable instructions for generating said Universal Client device provided by said first computer; and
- a processor for initializing and executing said Universal Client device on said second computer using said JAVA™ virtual machine to parse and process a script to thereby generate predetermined graphical user interface (GUI) objects and project said GUI objects on said second computer.

3. The computer system as recited in claim 2, wherein said predetermined GUI objects are defined by the script stored on said second storage device, and wherein said Universal Client device parses and processes said script to thereby generate said predetermined GUI objects.

4. The computer system as recited in claim 2, wherein said predetermined GUI objects are defined by the script stored on said first storage device, and wherein said Universal Client device parses and processes said script to thereby generate said predetermined GUI objects.

5. The computer system as recited in claim 2, wherein said Universal Client device running on said second computer selectively modifies and replaces said predetermined GUI objects responsive to an incoming GUIScript message corresponding to changing parameters associated with said first computer.

6. The computer system as recited in claim 2, wherein said Universal Client device running on said second computer selectively modifies and replaces said predetermined GUI objects responsive to an incoming datagram corresponding to changing parameters associated with said first computer.

7. The computer system as recited in claim 2, wherein said Universal Client device running on said second computer selectively modifies and replaces said predetermined GUI objects responsive to an incoming character string corresponding to changing parameters associated with said first computer.

8. The computer system as recited in claim 2, wherein one of said predetermined GUI objects comprises a MultiMedia presentation.

9. The computer system as recited in claim 2, wherein one of said predetermined GUI objects comprises a duration timer.

10. A computer system generating a graphical user interface (GUI) on a first computer corresponding to a presentation generated on a second computer irrespective of the operating system differences between said first and second computers, wherein:

said first computer comprises first means for responding to a string for invoking said GUI, said first means running on a JAVA™ virtual machine; and

said second computer comprising second means for generating said string, wherein said string comprises a GUIScript message.

11. The computer system as recited in claim 10, further comprising third means for transferring said string from said second means to said first means.

12. A computer system generating a graphical user interface (GUI) on a first computer screen corresponding to a presentation generated with respect to a second computer screen irrespective of the operating system differences between the respective first and second computers, comprising:

first means for providing a hypertext markup language (HTML) document including an applet tag corresponding to a Universal Client device;

second means for initializing and executing the Universal Client device using a JAVA™ virtual machine;

third means for parsing and interpreting a script associated with the Universal Client device to thereby cause the Universal Client device to display the GUI; and

fourth means for generating the script for causing the Universal Client device to display the GUI.

13. The computer system as recited in claim 12, wherein said script is written in a GUIScript scripting language.

14. The computer system as recited in claim 12, wherein said GUI includes a plurality of GUI objects.

15. The computer system as recited in claim 14, wherein one of said GUI objects comprises a MultiMedia object.

16. The computer system as recited in claim 14, wherein one of said GUI objects comprises a performance assessment object.

17. The computer system as recited in claim 12, wherein said first and said fourth means collectively comprises said first computer and wherein said second and third means collectively comprise said second computer.

18. A computer system generating a graphical user interface (GUI) on a first computer corresponding to a presentation generated on a second computer irrespective of the operating system differences between said first and second computers, wherein:

said first computer comprises first means for responding to a string for invoking said GUI, said first means running on a JAVA™ virtual machine; and

said second computer comprising second means for generating said string,

wherein said string comprises a datagram.

\* \* \* \* \*



US006220509B1

**(12) United States Patent**  
**Byford****(10) Patent No.: US 6,220,509 B1**  
**(45) Date of Patent: Apr. 24, 2001****(54) PARCEL TRACE SYSTEM****(75) Inventor:** Derrick John Byford, London (GB)**(73) Assignee:** International Business Machines Corporation, Armonk, NY (US)**(\*) Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.**(21) Appl. No.:** 09/113,806**(22) Filed:** Jul. 9, 1998**(30) Foreign Application Priority Data**

Dec. 18, 1997 (GB) ..... 9726740

**(51) Int. Cl.:** ..... **G06F 17/00****(52) U.S. Cl.:** ..... **235/375; 705/1****(58) Field of Search** ..... **705/1, 26; 235/375; 707/1, 10****(56) References Cited****U.S. PATENT DOCUMENTS**

5,631,827 *	5/1997	Nicholls et al.	395/228
5,804,803 *	9/1998	Cragun et al.	235/375
5,869,819 *	2/1999	Knowles et al.	235/375
5,970,472 *	10/1999	Allsop et al.	705/26
6,047,053 *	4/2000	Miner et al.	379/201
6,047,264 *	4/2000	Fisher et al.	705/26
6,070,793 *	6/2000	Reichl et al.	235/375

**FOREIGN PATENT DOCUMENTS**

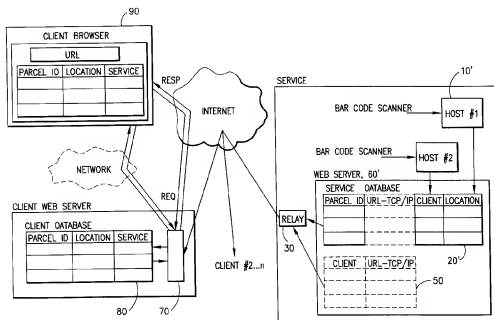
WO 97/08628

A1 6/1997 (WO).

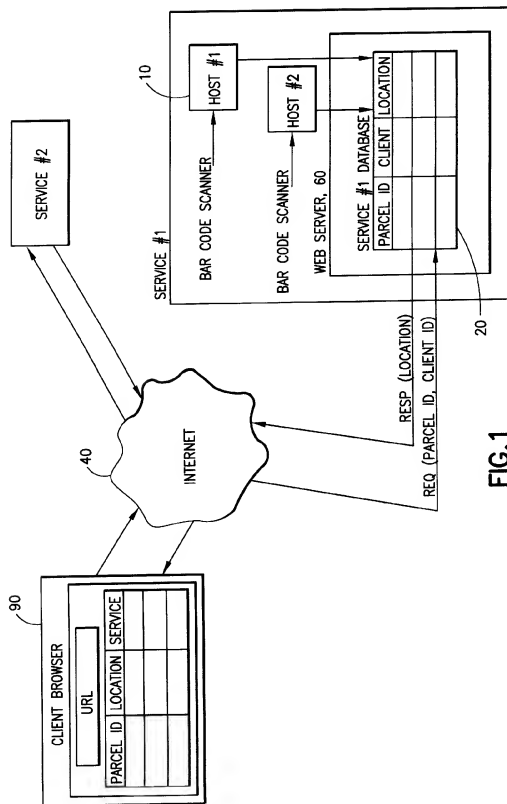
\* cited by examiner

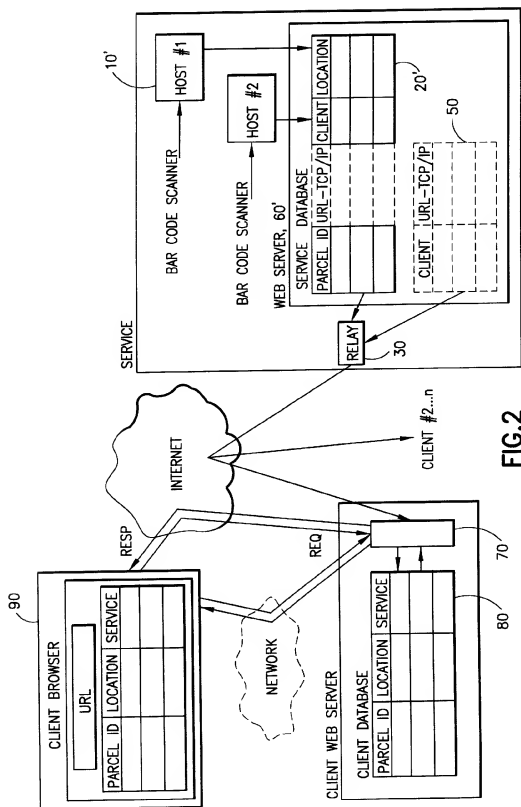
*Primary Examiner*—Michael G. Lee*Assistant Examiner*—Jamara A. Franklin*(74) Attorney, Agent, or Firm*—David M. Shofit; Anne Vachon Dougherty**(57) ABSTRACT**

A parcel trace system for tracing parcels handled by a service provider for a plurality of clients. The system includes relay (30) adapted to communicate with the clients across the Internet and with a server database. The server database stores a plurality of parcel objects, each parcel object including a parcel identifier attribute and a parcel location attribute. The server database further includes a URL attribute for each client. A client database (80) includes a plurality of parcel objects, each object corresponding to a parcel being handled for the client and including a parcel identifier and a parcel location attribute. A client database controller (70) communicates with the relay, and across a second network, possibly the Internet with the client. The relay is responsive to a change in state of the parcel location attribute to relay the change in state of the parcel location attribute to the client database controller across the Internet. The client database controller responds to receipt of the change in state of parcel location to write the change of state to the client database. The client database controller is further responsive to parcel location requests from the client across the second network to return a location and a parcel identifier for any parcels requested by the client.

**10 Claims, 2 Drawing Sheets**







# 1

## PARCEL TRACE SYSTEM

### TECHNICAL FIELD

The present invention relates to an improved parcel trace system.

### BACKGROUND OF THE INVENTION

FIG. 1 shows a conventional parcel trace system. A parcel delivery service provider, for example, Federal Express, UPS or DHL, assigns a unique parcel identification, known as an Air Bill number, to each parcel. This is done by providing to a client two-part blank forms, each including a unique pre-printed bar code, corresponding to the Air Bill number, on each part of the form. One part of a form is attached to the parcel, while the client retains the other part of the form including a copy of the barcode affixed to the parcel. The parcel identification barcode is scanned at a number of locations worldwide at each stage of delivery to track its progress. The barcode scanner communicates with a host computer 10 to transmit the parcel ID to the host computer. The parcel ID and its location information are transmitted by the host computer 10 to one or more web servers 60 (only one shown) each including a database table 20 maintained by the service provider.

The client, running a web browser 90, is able to link through the Internet 40 to the service provider web server 60, and thus the database table 20, by specifying a URL (universal resource location). The URL usually points to a HTML file which is transmitted to the client who is then prompted to enter the unique parcel ID and optionally the client ID, for security reasons. These are transmitted to the service provider web server 60 and used as search criteria by the service provider, which returns the current location of the client's parcel to the browser 90 for display.

A problem exists where a large client may use a variety of delivery service providers, each with different web pages, to send multiple parcels. It is a time consuming exercise to track these parcels, with separate parcel identifications to be entered for each parcel, and separate service provider web pages to be accessed.

It is an object of the present invention to provide a parcel trace system capable of accommodating single-point tracking by a client of a plurality of parcels being handled by a number of different delivery service companies.

### SUMMARY OF THE INVENTION

Accordingly, in a first aspect, the present invention provides a parcel trace system for tracing parcels handled by a service provider for a plurality of clients, said system including relay means adapted to communicate with said database across a first network and with a server database, said server database being adapted to store a plurality of parcel objects, each parcel object including a parcel identifier attribute and a parcel location attribute, said server database further including a first network address attribute for said clients and wherein said relay means is responsive to a change in state of said parcel location attribute to relay said change in state of said parcel location attribute across said first network to a client for whom said parcel is being handled.

In a second aspect, the invention provides a parcel trace system for tracing parcels handled by a plurality of service providers for a client, said system including a client database controller and a client database, said client database including a plurality of parcel objects, each parcel object corre-

sponding to a parcel being handled for said client and including a parcel identifier and a parcel location attribute, said client database controller being adapted to communicate across a first network with a plurality of relay means, each associated with a respective service provider, and across a second network with said client, each relay means being responsive to a change in state of a parcel location handled by an associated service provider to relay said change in state to said client database controller across said first network, said client database controller being responsive to receipt of said change in state of parcel location to write said change of state to said client database, said client database controller being further responsive to parcel location requests from said client across said second network to return a parcel location and a parcel identifier for any parcels requested by said client.

### BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a schematic view of a conventional parcel trace system; and

FIG. 2 is a schematic view of a parcel trace system according to the present invention.

### DESCRIPTION OF PREFERRED EMBODIMENT

In a first embodiment of the invention, FIG. 2, a client uses conventional barcode generating software to generate barcoded labels for parcels. The software enables the client to encode a URL or possibly a TCP/IP address, a parcel identification code, and other optional information (eg. update authorization) and print this information as a bar-coded label that is physically applied to the packaging of a parcel or other item for delivery.

A delivery service picks up the parcel and at various intermediate locations in the course of delivery of the parcel, the delivery service scans the barcode, usually with a hand held scanner, and the barcode information is dumped to a host machine 10 at the location. The barcoded information is transmitted by the host 10 to a delivery service web server 60 in a conventional manner. The server 60 translates the barcode information into the client's URL and parcel identification code and stores this information as a parcel object in a database table 20. In the first embodiment, the table 20 includes a parcel ID, a URL or TCP/IP address, an optional client ID and a location attribute.

In order to ensure secure access to parcel location information, the database may already have received the client information associated with a parcel from when the parcel was picked up by the service provider. Alternatively, the information can be included in the barcode and inserted in the database table 20 whenever it is updated with location information.

Relay software 30 on the delivery service's server 60 or connected to this server continually monitors, or is triggered by changes in the database table 20. When a parcel object is updated with new location information, the software 30 establishes a link to the Internet and accesses the client's parcel tracking home page using the scanned URL. In one embodiment of the invention, the clients home page resides on a web server with a CGI-BIN standard back end controller 70 controlling access to a database table 80. Thus, the URL is of the form:

"http://domain/path/update.cgi-bin/parcelID+location+service"

This URL connects the relay software 30 to the specified path on the specified domain and will cause the back end

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controller 70 to execute a script file called "update." "parcelID+location+service" are passed as parameters to the script file which, for example, calls a database program to write or update a parcel object with the new location and service provider information. An example of a suitable database management system which could be employed for implementing the database table 80 or the table 20' is DB2 produced by IBM. It will be seen that the invention is not limited to CGI-BIN and other examples of back-end controllers are PERL or ISAPI produced by Microsoft.

In a similar manner to writing the information, a client browser 90 retrieves information from the database 80 using a URL of the form:

"http://domain/path/retrieve.cgi-bin/criteria"

In this case, a script file "retrieve" is called by the back-end controller 70 with a set of criteria, possibly "null" if all parcel information is to be retrieved, and the location for each parcel selected from the database is returned for display on the client browser 90.

If a TCP/IP address is used, then the relay software can connect in a peer to peer manner with the client's web server and write the information to the database 80 in any manner the client and service provider may agree on.

In any case, the software 30 provides the parcel reference code, optionally the name of the delivery service provider, and the parcel location information for insertion into the client's parcel tracking database 80.

It will be seen that the database 80 can be accessed by a client running a conventional browser using either the Internet or Intranet. The client can use conventional CGI-BIN requests or a dedicated applet to retrieve and display the information, or if the client is using another type of network, a dedicated application program could be written to access the database 80.

In any case, the database 80 can be interrogated to display the location of the parcel, and any other of the client's parcels, in an appropriate form on a page that is accessible only by the client.

It will be seen that the delivery service company effectively 'echoes' its tracking of the parcel directly onto the client's webpage. All the clients parcels, with whatever service, thus appear on the same page and the client does not need to access systems and enter codes individually for every item (there could be hundreds).

The benefit is that a large client can track all of its parcels in one go, and with any number of delivery services using the system. A postroom can display the relevant webpage showing the delivery status of all items constantly and just refresh it every now and then.

It will be seen that because every client's TCP/IP or URL address is unique, there will be no conflict between barcodes produced by different clients for different service providers.

In a second embodiment of the invention, the client needs to register with a delivery service in advance of sending parcels. At registration, the client provides his TCP/IP address or the URL of his parcel tracking data capture home page to the delivery service. This is recorded by the delivery service in a database table 50 having only a client ID and a URL - TCP/IP address attributes for future use.

The client's software generates barcodes on adhesive labels in the conventional manner. There is no need to include the client's URL or TCP/IP address, only the parcel ID and any other optional information. Thus, the table 20' in the second embodiment does not include the URL or TCP/IP address attribute of the first embodiment.

The delivery service scans the barcode on the parcel in the same way as in the first embodiment, however, the delivery

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service's relay software 30 in this case uses the database table 50 to look up the client's URL using the unique client reference code associated with a parcel.

The advantage of the first embodiment is that there is no requirement for pre-registration with a delivery service and the parcel may be sent with any delivery service using the described system. It does, however, require delivery services to be able to adapt to a change in the format of their bar codes.

The advantage of the second embodiment is that access to the client's parcel tracking data access home page is secure and only accessible by authorised delivery services. The delivery services need only install the relay software 30, for forwarding updated location information to a client.

It will be seen that the location attribute of the database table 20' of either embodiment can be in a variety of formats. The location may be a simple set of states such as "to be picked up", "in transit", "delivered" or its state may reflect the actual geographical location of the package.

It will be seen that both embodiments share the advantage that a client can keep more useful information on its own database 80, than would the service provider on their database tables 20 or 20'. A client could therefore flag the postroom with the urgency of delivery of a parcel, or with a contact name to call when the parcel is delivered.

What is claimed is:

1. A parcel trace system for tracing parcels handled by a service provider for a plurality of clients, said system including:

relay means adapted to securely communicate with said clients across a first network and with a server database;

a server database adapted to store a plurality of parcel objects, each parcel object including a parcel identifier attribute and a parcel location attribute, said server database further including a first network address attribute for each specific one of said clients;

and wherein said relay means is responsive to a change in state of said parcel location attribute to automatically and securely relay said change in state of said parcel location attribute across said first network to the specific client for whom said parcel is being handled.

2. A parcel trace system as claimed in claim 1 in which said server database includes a first table comprising a parcel identifier, a network address and a location attribute for each parcel object.

3. A parcel trace system as claimed in claim 1 in which said server database includes a first table comprising a parcel identifier, a network address, a client identifier and a location attribute for each parcel object, and a second table comprising a client identifier and a network address attribute for each client.

4. A parcel trace system as claimed in claim 1 in which said network address attribute is a universal resource location attribute.

5. A parcel trace system for tracing parcels handled by a service provider for a plurality of clients, said system including:

relay means adapted to communicate with said clients across a first network and with a server database;

a server database adapted to store a plurality of parcel objects, each parcel object including a parcel identifier attribute and a parcel location attribute, said server database further including a first network address attribute for said clients;

and wherein said relay means is responsive to a change in state of said parcel location attribute to relay said

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change in state of said parcel location attribute across said first network to a client for whom said parcel is being handled;

a client database, said client database including a plurality of parcel objects, each object corresponding to a parcel being handled for said client and including a parcel identifier and a parcel location attribute and

a client database controller being adapted to communicate across said first network with said relay means, and across a second network with said client

and wherein said relay means is adapted to relay said change in state of said parcel location attribute to said client database controller across said first network, said client database controller being responsive to receipt of said change in state of parcel location to write said change of state to said client database, said client database controller being further responsive to parcel location requests from said client across said second network to return a location and a parcel identifier for any parcels requested by said client.

6. A parcel trace system as claimed in claim 5 in which said first and second networks are the Internet.

7. A parcel trace system for tracing parcels handled by a plurality of service providers for a client, said system including a client database controller and a client database, said client database including a plurality of parcel objects, each parcel object corresponding to a parcel being handled for said client and including a parcel identifier and a parcel

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location attribute, said client database controller being adapted to communicate across a first network with a plurality of relay means, each associated with a respective service provider, and across a second network with said client, each relay means being responsive to a change in state of a parcel location handled by an associated service provider to relay said change in state to said client database controller across said first network, said client database controller being responsive to receipt of said change in state of parcel location to write said change of state to said client database, said client database controller being further responsive to parcel location requests from said client across said second network to return a parcel location and a parcel identifier for any parcels requested by said client.

8. A parcel trace system as claimed in claim 7 in which said server database includes a first table comprising a parcel identifier, a network address and a location attribute for each parcel object.

9. A parcel trace system as claimed in claim 7 in which said server database includes a first table comprising a parcel identifier, a network address, a client identifier and a location attribute for each parcel object, and a second table comprising a client identifier and a network address attribute for each client.

10. A parcel trace system as claimed in claim 7 in which said network address attribute is a universal resource location attribute.

\* \* \* \*

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Jeffry Jovan Philyaw; David Kent Mathews  
Serial No.: 09/494,924  
Confirmation No.: 4127  
Filed: February 1, 2000  
Group: 2167  
Examiner: J. Fischetti  
For: INPUT DEVICE FOR ALLOWING INTERFACE TO A WEB SITE IN  
ASSOCIATION WITH A UNIQUE INPUT CODE

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

**AMENDMENT AFTER FINAL**

This communication is responsive to the Examiner's Office Action mailed May 18, 2006.

**Amendments to the Claims** are reflected in the listing of claims beginning on page 2 of this paper.

**Remarks/Arguments** begin on page 4 of this paper.

## In the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1-21 (Canceled).

Claim 22 (Previously Presented): A method for interconnecting a first location on a global communication network with a second location thereon, comprising the steps of:

providing an input device coupled to the first location on the global communication network, the input device having associated therewith a unique input device ID that is permanently associated with the input device and independent of the first location;  
5 scanning a product code disposed on a product with the input device, which product code is representative of the product in commercial transactions, the step of scanning operable to extract the information contained in the product code to provide a unique value as an output;

10 associating the unique value with the unique input device ID in a message packet, such that the unique input device ID is associated with the message packet for transmission over the network and wherein the second location has a predetermined association with the combination of the unique value and the unique input device ID, such predetermined association associates the second location with both the unique device ID and the unique value ; and

15 in response to the step of scanning and the step of associating, connecting the first location to the second location.

Claim 23 (Previously Presented): The method of Claim 22, wherein the step of connecting to the second location comprises:

in response to the step of scanning and the step of associating, accessing a database having stored therein a plurality of unique values for a plurality of products, each associated with routing information over the global communication network to one of the plurality of second locations;

5 comparing the output unique value with the stored unique values in the database;  
and

10 if a match exists between the output unique value and any of the stored unique values:

retrieving from the database the associated routing information to the second location, and

connecting the first location to the second location on the global communication network in accordance with the retrieved routing information.

Claim 24 (Previously Presented): The method of Claim 22, wherein the unique value comprises a binary value.

Claim 25 (Previously Presented): The method of Claim 22, wherein the product code comprises a universal product code (UPC) as associated with a product indicating information regarding the product for use in commercial transactions associated with that product.

Claim 26 (Previously Presented): The method of Claim 23, wherein the step of accessing the database comprises the steps of:

accessing a remote location on the global communication network at an intermediate node thereon;

5 forwarding the unique value and unique device ID to the intermediate node;  
wherein the database is disposed at the intermediate node; and

retrieving the associated routing information from the database in the event of a positive match and forwarding the retrieved routing information back to the first location and connecting the first location to the second location in accordance with the retrieved information.

Claim 27 (Previously Presented): The Method of Claim 23, wherein the second location represents product information associated with the product.



## REMARKS

1. Applicants have carefully reviewed the Office Action dated May 16, 2006. Reconsideration and favorable action is respectfully requested.
2. Claims 22-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Hudetz et al.* in view of *Ogasawara* and *Simonoff et al.* This rejection is respectfully traversed with respect to the claims as currently presented.
3. Claim 22 is the independent claim and basically is a method claim that requires a number of steps. The first step is to provide an input device that has associated therewith a “unique input device ID” that is “permanently” associated with the input device and it is independent of the first location. The second step is to scan a product code with this input device. This product code is representative of the product in a commercial transaction. This scanning operation extracts information from the product code. Thereafter, there is a step of associating the unique value extracted from the product code with the input device ID and then transferring this over the network. There is a “predetermined association” of a second location on the network with the *combination* of the unique value and the unique input device ID. In response to this scanning step and the associating step, a connection is made to the second location, the second location being the one that has the predetermined association with the combination of the unique value and the unique device ID.
4. As noted in the specification, one of the purposes of this claimed combination of steps is to allow a manufacturer to distribute a device with a permanent ID, which permanent ID can then be used, in combination with a product code, to connect a user to a particular website. The example is that of a manufacturer that distributes the scanning device and then, based upon the fact that this manufacturer scanned the code, there can be a predetermined routing to a particular website based upon the scanner ID and the scanned code. If, for example, one cola manufacturer, for example, cola manufacturer A, distributed a scanning device and the scanner scanned a code associated with cola manufacturer B, then scanning cola manufacturer A could

provide a website that would actually provide a coupon based upon the item scanned from cola manufacturer B for the person that scanned the system in order to somehow promote sale of their product.

5. In order to properly reject a claim for obviousness, the PTO must first establish a *prima facie* case. Once the PTO has established such a *prima facie* case, the burden then shifts to the Applicant to provide sufficient evidence of the nonobviousness to successfully rebut such a *prima facie* case. What constitutes a *prima facie* case can, however, vary on a case-by-case basis.

6. With respect to obviousness, a claimed invention is unpatentable if the differences between it and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.” 35 U.S.C. § 103(a) (2000); *In re Kahn*, 441 F.3d, 977, 985 (Fed. Cir. 2006) (citing *Graham v. John Deere Co.*, 383 U.S.1, 13-14, 86 S.Ct. 684, 15L, Ed. 2d 545, 1962.) Obviousness is a question of law, based upon underlying factual questions which are reviewed for clear error following a bench trial. These “underlying factual inquiries include: (1) The scope and content of the prior art; (2) The level of ordinary skill in the prior art; (3) The difference between the claimed invention and the prior art; and (4) Objective evidence of nonobviousness.” *Alza Corporation v. Mylan Laboratories, Inc. and Mylan Pharmaceuticals, Inc.*, 464 F.3d 1286, 1288 (2006), citing *In re Dembiczak*, 175 F.3d 994, 998 (Fed. Cir. 1999).

7. In *Khan* the Court noted that:

“to reject claims in an Application under § 103, an Examiner must show an un rebutted *prima facie* case of obviousness... on appeal to the board, an Applicant can overcome a rejection by showing sufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of a secondary indicia of nonobviousness.” (*Kahn* at 985)

8. When combining references, it is well recognized that most inventions arise from a combination of old elements and each element may often be found in the prior art. *In re*

*Rouffett*, 149 F.3d 1350, 1357. However, mere identification in the prior art of each element is insufficient to defeat the patentability of the combined subject matter as a whole.” *Kahn* at 986, citing *Rouffett* at 1355, 1357. *Khan* further went on to state that:

Rather, to establish a *prima facie* case of obviousness based on a combination of elements disclosed in the prior art, the Board must articulate the basis on which it concludes that it would have been obvious to make the claimed invention. *Id.* In practice, this requires that the Board “explain the reasons one of the ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.” *Id. at 1357-59.* This entails consideration of both the “scope and content of the prior art” and “level of ordinary skill in the pertinent art” aspects of the Graham test. (*Kahn* at 986)

9. The primary test that has been put forth by the Federal Circuit is the motivation-suggestion-teaching test. *Kahn* set forth that, when there is no explanation provided by the Board to explain the motivation, or the suggestion or the teaching, that would have led a skilled artisan at the time of the invention to the claimed combination as a whole, then the court would infer that hindsight was utilized to conclude that the invention was obvious. *Kahn* relied upon the *Rouffett* case for this teaching at 1358. The “motivation-suggestion-teaching” requirement was set forth to protect against the entry of hindsight into the obviousness analysis, a problem which § 103 was meant to confront. Thus, there is a requirement, in order to establish a *prima facie* case, that there be some explanation as to motivation, suggestion or teaching of each of the references and how they can be combined.

10. Although the motivation-suggestion-teaching test has been set forth, there is still the “analogous-art” test that must first be applied, this being one test that was articulated by the Supreme Court as a part of the Graham analysis. See *Dann v. Johnston*, 425 U.S. at 219, 226, 96 S. Ct. 1393, 47 l. ed. 2d 692 (1976). “The analogous-art test requires that the Board show that a reference is either in the field of the Applicant’s endeavor or is reasonably pertinent as to the problem with which the inventor was concerned in order to rely on that reference as a basis for rejection.” (*Kahn* at 987). The following was further stated by *Kahn*:

References are selected as being reasonably pertinent to the problem based on the judgment of a person having ordinary skill in the art. *Id.* (“It is necessary to consider the reality of the circumstances, in other words, common sense—in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.” (quoting *In re Wood*, 599 F.2d 1032, 1036 (C.C.P.A. 1979))). We have explained that this test begins the inquiry into whether a skilled artisan would have been motivated to combine references by defining the prior art relevant for the obviousness determination, and that it is meant to defend against hindsight. See *id.*; *In re Clay*, 996 F.2d 656, 659-60 (Fed. Cir. 1992). n3” (*Kahn at 987*)

As such, it can be seen that the first step of analyzing the combination that the Examiner has provided is to first look at the combination of references and determine if they satisfy the analogous-art test.

11. The primary reference that the Examiner has cited is the *Hudetz* reference. This reference has been discussed before, but Applicant will revisit the operation thereof. The primary purpose of *Hudetz* is to provide a means for a user to scan a product code on a manufactured item, such as a can of vegetables. The scanning operation results in transfer of the information in the scanned code to a database, which database then is operable to perform a look-up code. A matching operation is then made and the “matching records” are returned. In general, the transfer of the UPC code to the database is termed to be a query, which query is for the purpose of returning to the user an associated URL that is associated in the database for that particular scanned code. A query page is then displayed on the CRT at the local host using a forms capable browser. (Column 7, lines 43-51.) When the user sets a system up, the first step is to provide a “query page” in the browser software that provides access to the database. (Column 8, lines 21-24.) There is a distinction made in that a human could be the user that loads the program or it could be the machine running a process. Thereafter, this query page is transmitted to the local host computer in the form of a HTML document. The preferential way of inputting the information into the query page is to scan the UPC symbol. This way, the user can scan in multiple UPC codes and then transmit all of these to the database wherein the database will then retrieve all of the records that have matching UPC fields. The records are then

conveyed to the user in the form of an HTML document that is displayed for the user. (See Figure 6). These records are then displayed for the user and the user is provided the option of clicking on those particular records to go to a particular website.

12. In other alternate embodiments of the *Hudetz* reference, there is reference to “automatic jumping” to a desired location. This is an operation wherein the user must somehow set a flag to examine the returned HTML document in order to make a decision as to the returned records. This is because there is a possibility of returning multiple records for a query. This is an alternative to displaying the query results. However, there is no disclosure as to how this would be facilitated.

13. In general, the primary purpose of *Hudetz* is to provide users a convenient access to information located on computer networks such as the internet. (Column 1, line 17-19). As stated in the Summary of the Invention section, this invention provides a better way for consumers and others to access resources on remote computers. This is facilitated by the barcode or other indicia that is associated with a product or other article of commerce.

14. The question is whether the combination of *Hudetz* with *Ogasawara* and/or *Simonoff* all relate to analogous-art. As the Examiner has noted in the Office Actions *Ogasawara* is provided for the disclosure of a “permanently associated ID telephone number” with a device, specifically referring to column 10, lines 1-41 of *Ogasawara*. The *Simonoff et al.* disclosure is provided for the purpose of supporting the “unique ID” portion of the claim. The Examiner stating that *Simonoff*, at column 11, lines 13-16, discloses a unique ID which is commonly associated with a message (value) between different locations.

15. With respect to the *Ogasawara* reference, this is a reference that discloses an electronic shopping system. The purpose of the system is set forth in the abstract as it “facilitates purchase transactions via a wireless telephone.” This wireless telephone is utilized for the purpose of scanning a barcode, in one embodiment, and sending this barcode along with information identifying the source of the transmission to a server. The purpose of this combination of information is to provide for two things. The first is to utilize the scanned code to retrieve

information and return it to the user, i.e., information about the scanned product. The second is to interface the transaction with the user profile for the purpose of updating user records, storing scan codes for items to be purchased and even storing scan codes for items that are not purchased but which may have been looked at. There is no association stored in any database between the scanned code sent in conjunction with the telephone number. This action in and of itself really does not require the telephone number or any information from the phone other than for the purpose of returning information associated with the transmitted scanned code back to the requesting location. This is no different than a computer on a network requesting information about a barcode for the purpose of completing a transaction in a Point of Sale (POS) system. In those systems, a computer must request information and the server or the such, in order to send the information back to the requesting node, must know the address of that node and return information to that node, noting that there is already an open connection, thus not requiring any telephone number for the return. For the purposes of this disclosure, the reason for receiving a telephone number of the user and utilizing that telephone number, is to allow verification of the user prior to returning information. In this particular disclosure in *Ogasawara*, the phone number specifically allows the user to complete a transaction utilizing their phone apart from and separate from returning information to the user regarding the transmitted scanned code. Thus, a user can scan a code, enter the code into the server such that a running list is kept under that user's name and then the user can utilize the phone to complete a transaction at a later time at a cash register by scanning in the code of the cash register. Thus, the scanned in codes, other than being returned and displayed to the user, are maintained in a database in association with that telephone number *after* transmission and not before. The reason to associate it with a customer is for the purpose of maintaining credit card information and the such to complete a transaction, in addition to the fact that the store wishes to keep track of the user. However, *Hudetz* is a system that scans for the purpose of returning information based upon looking up a URL. The *Ogasawara* reference discloses a device that is nothing more than a scanner that requests information regarding the scanned code totally separate from the telephone number.. *Ogasawara*, for this purpose, is no different than any POS terminal. The remaining portion of *Ogasawara*, that associated with utilizing the telephone number to complete a transaction, etc., is not related to *Hudetz*. However, this is a system that provides information in response to the

scanning of a code and sending of the information in that code to a server to return information about the code itself. However, the Examiner is utilizing this for the purpose of the element “the input device having associated therewith a unique input device ID that is ‘permanently’ associated with the input device and independent of the first location.” The question, more importantly, becomes whether providing a telephone number that is arguably fixed with respect to the phone, would be analogous-art to permanently affixing an ID in a scanner. First, a scanner is different than a telephone. Second, when you permanently affix an ID in a scanner, this is permanently fixed in the scanner such that neither the user nor anyone else can change it. It is shipped with the unit and not alterable. Compare that with a telephone, especially a wireless telephone. The wireless telephone really has nothing more associated with it than a fixed ID number or serial number in the phone. In accordance with CDMA technology, a phone number is something that a telephone network associates with that particular phone. This particular phone number is associated with the customer, as the customer virtually owns that telephone number, depending upon the type of contract that they have. In some situations, the phone company owns the telephone number and not the customer. However, in any event, this phone number is not permanently associated with the telephone; rather, it is at best associated with the customer and it can, at any time, be associated with another phone. Therefore, Applicants believe that the *Ogasawara* reference is not an analogous reference with respect to this element. Applicant does not believe that one skilled in the art would look toward a telephone unit, especially a wireless telephone unit, for the purpose of providing a scanner with a “permanently” affixed unique ID.

16. The Examiner has provided the *Simonoff* reference for the purpose of supporting the rejection of the claim for the element “the unique ID” that is associated with the message packet. The Examiner is referring to the disclosure in *Simonoff* at column 11, lines 13-68. The *Simonoff* reference is a reference that provides a computer system and nodes that are referred to as “universal client devices.” The manner in which this operates is to provide this universal client device on the network and then allow the server to interface with that universal client device. The particular operation of assigning a particular ID to a particular universal client device is set forth in column 11, beginning at line 12 as follows:

After the Universal Client device on the client host 300 establishes the Transmission Control Protocol/Internet Protocol (TCP/IP) socket connection, the host server 100 immediately responds, in an exemplary case, to the Universal Client device with the characters "(Client:you\_are\_id\_number)," where id\_number is a unique 8-digit integer, during step 4. It will be appreciated that a computer generated server host socket hashcode value is generally recommended for id\_number, since it is guaranteed to be unique and since it identifies the logical socket connection between the server host 100 and the client host 300 running the Universal Client device. It should be mentioned that the server host 100 advantageously can selectively send GUI-Script to multiple client hosts 300a-300r, as shown in FIG. 2 by filtering the ID\_number.

It can be seen from this that there is no permanent affixing of the ID to a particular device but, rather, just an assigning of an ID for the purpose of recognizing the system on a network, during a communication session, i.e., this is a source or distribution address. This is to be compared with such systems as Ethernet cards, which have an ID permanently associated therewith at the time of shipping. Thus, would a software ID that is provided to a system that then uniquely identifies a node on a network but which is not associated with it, be analogous-art when a person in the scanner art is seeking to permanently affix a unique ID to a scanner? Applicants believe that such is not the case, as one would not look to this type of system to provide any unique ID that is utilized for the purpose of matching as opposed to identifying a source address on a network. Therefore, Applicants believe the *Simonoff* reference is not analogous art.

17. Even though Applicants believe that these references are not necessarily analogous, the next step for determining obviousness is to analyze the motivation-suggestion-teaching test which:

. . . picks up where the analogous art test leaves off and informs the Graham analysis. To reach a non-hindsight driven conclusion as to whether a person having ordinary skill in the art at the time of the invention would have viewed the subject matter as a whole to have been obvious in view of multiple references, the Board must provide some rationale, articulation, [\*\*23] or reasoned basis to explain why the conclusion of obviousness is correct. The requirement of such an explanation is consistent with governing obviousness law, see § 103(a); *Graham*, 383 U.S. at 35;



*Dann*, 425 U.S. at 227-29, and helps ensure predictable patentability determinations. (*Khan at 987*).

18. Despite that all elements of the claim may have been disclosed in various prior art references, it has long been a rule that the claimed invention, as a whole, (*In re Hiraro*, 535 F.2d, 67, (C.C.P.A. 1966) can not be said to have been obvious as there must be some reason or motivation given in the prior art why someone would have been prompted to combine the teachings of the references. (*In re Regel*, 526 F.2d, 1399 (C.C.P.A. 1975); *In re Bond*, 910 F.2d, 831, (Fed. Cir. 1990)). The prior art itself may suggest desirability of a combination, or the motivation may come from other sources (for example, economic factors). (See e.g. *In re Clinton*, 527 F.2d 1226 (C.C.P.A. 1976); *Cable Elec. Prods., Inc. v. Genmart, Inc.*, 77 F.2d 1015 (Fed. Cir. 1985)). Thus, the motivation to combine the relevant art or teachings does not have to be found explicitly in the prior art but, rather, can be implicit thereto. “However, rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” (*In re Kahn at 988 referring to Lee*, 277, F.3d at 1343-46 and *Rouffett*, 149 F.3d at 1355-59.) The purpose of such requirement is to ensure “due process and non-arbitrary decision making”, as it is in § 103. (*Kahn at 988*).

19. *Kahn* articulated the considerations for motivation when analyzing obviousness. The Court in *Kahn* stated that “the problem examined is not the specific problem solved by the invention, but the general problem that confronted the inventor before the invention was made.” (*Kahn at 988 referring to Cross Medical Products, Inc. v. Metronics Sofamore Danek, Inc.*, 424 F.3d 1293, 1323 (Fed. Cir. 2005)). In the reference in *Cross*, the quote that was cited by the Court in *Kahn* (*Cross at 1323*) was that “one of ordinary skill in the art need not see the identical problem addressed in the prior art reference to be motivated to apply its teachings.” As to motivation, the Courts upheld that the evidence of motivation to combine the prior art references “may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved.” *Medichem I.V.*, 437 F.3d at 1165, quoting *Brown and Williamson Tobacco Corp. v. Phillip Morris, Inc.*, 229 F.3d, 1120, 1125 (Fed. Cir. 2000.) *Kahn* summarized the motivation-suggestion-teaching test as follows:

Therefore, the "motivation-suggestion-teaching" test asks not merely what the references disclose, but whether a person of ordinary skill in the art, possessed with the understandings and knowledge reflected in the prior art, and motivated by the general problem facing the inventor, would have been led to make the combination recited in the claims. See *Cross Med. Prods.*, 424 F.3d at 1321-24. From this it may be determined whether [\*\*26] the overall disclosures, teachings, and suggestions of the prior art, and the level of skill in the art--i.e., the understandings and knowledge of persons having ordinary skill in the art at the time of the invention--support the legal conclusion of obviousness. See *Princeton Biochemicals*, 411 F.3d at 1338 (pointing to evidence supplying detailed analysis of the prior art and the reasons one of ordinary skill would have possessed the knowledge and motivation to combine). *Kahn* at 988.

Thus, in order to prove obviousness with the combination of *Hudetz*, *Ogasawara* and *Simonoff*, the Examiner must provide an explanation as to whether the overall disclosures of these three references, the teachings therein and the suggestions associated therewith, in addition to the level of skill in the art, support the Examiner's conclusion of obviousness as to the invention as a whole.

20. First, the *Hudetz* reference is analyzed with respect to the claims to determine the shortcomings thereof in anticipating and/or obviating the claim. Independent Claim 22, as currently presented, is directed, in the preamble, to a method for interconnecting one location on a global communication network i.e., the internet, with the second location thereon. The first step is to provide an input device coupled to the first location on the global communication network. *Hudetz* does provide for a scanner to provide such. The next portion of the claim requires that the input device have associated therewith a unique input device ID that is *permanently associated with the input device* and independent of the first location. Certainly, the input device of *Hudetz* has no such unique input device ID nor is there have any suggestion or teaching that such would be useful for the intended purpose. As noted herein above, the purpose of *Hudetz* is to provide "a system and method for using identification codes found on ordinary articles of commerce to access remote computers on a network." (*Hudetz*, Abstract). In the background of the invention, *Hudetz* set forth the problems that were being addressed. One problem noted was that manual entering of published computer addresses, either URLs or

otherwise, were difficult to enter because they have to be tediously entered into the computers. (See column 2, lines 37-40). One example of this was the University of Texas address. A second problem that was noted was the trouble of even finding URLs or network addresses for desired sites such as web pages, leading to website sponsors publishing their website URLs in print advertising and on packaging. Again, the URLs are long and cumbersome to remember. A co-pending application of *Hudetz* solved this problem by allowing people to access published locations without having to enter the published address. When the address is published, the barcode has that address encoded therein such that a bar code reader can be utilized to load this desired numeric address into the browser. This was noted as providing a problem in that the network address can not contain upwards of 20-30 characters, thus requiring very long barcode symbols. Further, placement of the URLs on printed material required the manufacturer to redesign their products. Third, if the network address is changed, then the package needs to be redesigned.

21. The solution to all of these problems was arrived at for the purpose of offering a better way for consumers and others to access resources on remote computers, particularly websites. This was set out in the Summary of the Invention section. This solution is to utilize an existing product code, which product code has a predetermined purpose, and then “repurposing” this barcode by providing a remote site on which the URL is disposed in association with the barcode. This requires merely the reading of the barcode and transferring of this barcode to a computer, either remote or local, for the purpose of determining the associative link. This requires the opening of a browser or a query page, entry of the various barcodes, sending of the query and then the return of an HTML document with all of the potential responses. Thereafter, the user can select a particular location from this list. Therefore, in summary, *Hudetz* provides a system that repurposes a particular barcode for the purpose of returning information to a user in the form of URLs. There is no suggestion or need for any type of ID as there is no suggestion in *Hudetz* for in any way “filtering” the return addresses by any other information other than the scan code. All that is disclosed in *Hudetz* is the transmission of the encoded information within a barcode for the purpose of doing a “match” in the database and then returning a URL in an HTML document for presentation to the user. Thus, there is no suggestion or teaching in *Hudetz*

for the need of providing any type of ID in association with the scanning device nor a device ID that is permanently associated with the scanning device and further, provide this in a way that it is independent of the location at which the scanner is disposed. Such ID would not further the purpose of *Hudetz* or aid in solving the stated problems therein.

22. The second step of Claim 22 is that associated of scanning a product code disposed on a product with the input device. *Hudetz* does provide the operation of scanning this product code and the product code is one that is representative of the product in commercial transactions. The step of scanning is operable to extract the information contained in the product code and this thus provides a unique value, and *Hudetz* discloses such.

23. The third step of the claim is associating the unique input device ID in a message packet. The only disclosure in *Hudetz* is to provide the unique value associated with the barcode. There is no teaching or suggestion in *Hudetz* that would provide for a unique input device ID. Again, the purpose of *Hudetz* is to offer a better way for consumers and others to access resources on remote computers, particularly websites. The unique ID does not further this purpose. The unique ID in the claimed invention is a filtering device that allows the creator of a database to further filter the information that is sent to the user, i.e., the controller of the database that generates the information now has an additional piece of information, possibly even unknown to the user, that it can utilize in order to provide a response. The device ID has no relationship with a product and it does not allow a user to better access resources on remote computers or even better access different remote websites. Thus, there is nothing in *Hudetz* that would motivate one to search further and look for a solution of somehow providing a unique input device ID in the scanner for the purpose of later associating that with the barcode value. Again, this third step of Claim 22 requires that there be a second location on the website that has a predetermined “association with a combination of the unique value and the unique input device ID” for the purpose of associating the second location with both of these values. There is no reason to do such in order to achieve the purpose of *Hudetz* and, therefore, there is no reason for one, faced with the problems to be solved by *Hudetz*, to seek a solution utilizing the “additional” device ID to permanently place in the scanner. In fact, there is no discussion in *Hudetz* of what type of

scanner to be utilized for the particular operation. In *Hudetz*, beginning at column 8, line 34, it is stated:

Because the UPC product identification number is printed in both machine and human-readable format (See Fig. 3), this may be done by manual entry using keyboard, voice recognition system or other input device. More preferably, however, entry is accomplished by scanning UPC symbol 46 affixed to article 48. Input device 44 reads UPC symbol 46, and generates an ASCII character string which is read by CPU 30 via I/O port 38. if the UPC number is scanned, then all 10 digits will generally be entered.

It can be seen that manual entry is one type of entry, as well as voice recognition. There is no way to permanently affix an ID to this type of input. As such, *Hudetz* acknowledges that such is not required nor contemplated. In fact, in Applicants present invention, if a different scanner with a different unique ID were utilized, this would result in different information being returned to the user. From the disclosure of *Hudetz*, the barcode reader has no significance to the overall operation other than as an input device. In the claimed invention, the input device has an important purpose and that is to provide a way for a manufacturer to ship to an individual a barcode reader with a “permanently affixed unique ID” for the purpose of controlling the information that is sent to the user. The user has no knowledge of this particular operation and, therefore, it does not facilitate the purpose of *Hudetz*, i.e., to allow a user easier access to websites by providing a repurposing engine for a particular barcode. Thus, the Examiner must show that there is a motivation to solve the problem solved by Applicants’ present claims and also provide a reference that, at the time of the invention, somehow suggested that there was a problem that needed to be solved and provide teaching as to how to solve that problem by incorporating a unique input device ID into a scanner that could be utilized in the *Hudetz*-system for the purpose of allowing a matching operation to be performed at a database wherein that database had a unique association between the input device ID and a barcode symbol.

24. The Examiner has relied upon the *Ogasawara* reference to, as the Examiner has set forth, provide a teaching of an input device having an input device ID *permanently* associated with the input device and independent of the first location. The Examiner indicates that this is supported

by the fact that *Ogasawara* discloses a permanently associated ID telephone number (referring to the disclosure at column 10, lines 1-41). The disclosure of column 10, lines 1-41 is set forth as follows:

use of the cellular network 17 are avoided. Those skilled in the art will appreciate various other means of providing in-house radio communication between the wireless telephone 18 and the store server 10 are likewise suitable.

In use, a purchaser merely dials the telephone number of the store server 10 or remote server 26 with the wireless telephone 18. Upon connection of the wireless telephone 18 to the store server 10 or the remote server 26, the purchase transaction program is downloaded from the store server 10 or the remote server 26 into the wireless telephone 18 under the direction of a program loader 32 (FIG. 2).

More particularly, the telephone interface of the store server 10 or remote server 26 facilitates receipt of the telephone call from the customer and downloading of the appropriate purchase transaction program to the wireless telephone 18. The server personal shopping application facilitates sending and receiving of information between the customer's wireless telephone 18 and the store server 10 or remote server 26. When the store server 10 or remote server 26 is called by the customer's wireless telephone 18, then the telephone interface obtains the customer's phone number and then searches the customer information database in the store server 10 or remote server 26 in order to obtain the following information: customer's telephone number, download program ID, customer ID, and customer name. This information is preferably stored in the store server 10 or remote server 26 when the customer enrolls in the personal shopping application. In this manner, the customer's telephone number provides a degree of validation, and thus serves to indicate that the customer is authorized to make purchases.

Based upon the download program ID, the appropriate download program is downloaded from the store server 10 or remote server 26 to the wireless telephone 18. The particular purchase transaction program (which has a unique ID) which is transmitted from the store server 10 or remote server 26 to the wireless telephone 18 is selected so as to be consistent with the

purchaser's profile, e.g., telephone type, as well as the purchaser's personal preferences, such as language and particular interests.

25. This portion of the disclosure sets forth that the purpose of the telephone number is that, when the store server is called, the telephone interface will obtain the customer's phone number from that call and then it searches the customer information database "in order to obtain the following information: customer's telephone number, download program ID, customer ID, and customer name." (Column 10, lines 23-25). The purpose is further stated that "in this manner, the customer's telephone number provides a degree of validation, and thus serves to indicate that the customer is authorized to make the purchase." (Column 10, lines 27-31). However, the response of the server in returning information to the user about the scanned code sent in conjunction with the telephone number is not at that time involved with a purchase.

26. The Examiner has indicated that motivation is provided because "it would be obvious to modify *Hudetz et al.* to include such an ID because the motivation would be to allow the input device 120 to be free of a base station." (May 18, 2006 Office Action, page 2). The purpose of the scanner and the use of the unique ID has nothing to do with being free of any type of base station or location. The purpose is to provide a scanner that is associated more with a retailer and not with the location itself, i.e., it is not location specific. The unique ID itself is utilized for the purpose of filtering and determining what the information is that is returned to the user. Therefore, *Ogasawara* would have to provide some type of ID that was both permanently associated with the particular input device and which had the purpose of being stored in a database in order to provide one motivation to combine with *Hudetz*. There is no such purpose disclosed in *Ogasawara*. The telephone number is merely for the purpose of validating that the user is in the database, and the purpose for this is to allow a user to complete a later transaction after multiple desired items are flagged for purchase and to possibly complete the purchase with a pre-stored credit card. Further, the user telephone number is allowed to define a certain portion of the database in which information can be stored as to that user's purchase habits. Even though a barcode may be sent in association with or shortly after a particular telephone number is sent, this barcode merely indicates that information is requested and there is no use of the customer's telephone number to in any way affect what type of information is returned, i.e., all that is

needed is the scanned code. Additionally, the claim requires that this ID be “permanently” associated with the input device. This is a telephone number. The telephone number is unique to a particular customer at that time. The customer contracts with a telephone network or with a provider to either own the telephone number or to utilize the telephone number (sometimes certain providers only provide the telephone number as long as the bill is paid, after which the telephone number is recycled). Further, the telephone device is a wireless telephone. Wireless telephones do not have any telephone number permanently affixed thereto. They have a serial number. This serial number or ID code stored therein must be sent to a central location to look up the telephone number of the user for the purpose of providing the telephone number in a caller ID function. Thus, the phone itself does not have a telephone number uniquely or permanently fixed thereto - it can be associated with a different telephone at any time by the user. The user can dispose of the telephone and obtain another telephone. Therefore, there is disclosed no way to provide to a user an input device that has a ID permanently affixed thereto. Thus, there is no teaching or suggestion in *Ogasawara* that there is a permanently affixed ID associated with the telephone, that this permanently affixed ID would be useful to facilitate returning “information” to a user from a barcode other than the information that is always associated with that barcode. Thus, *Ogasawara* does not provide a system that would in any way teach a reason for utilizing a permanently affixed ID in an input device in the *Hudetz* reference.

27. The Examiner had made some comments with respect to this portion of Applicants arguments, which arguments have been presented before. The important portion of those comments are set forth on page 3 and page 4 of the current Office Action as follows:

Applicant argues that nowhere in the art relied on by the Examiner is there a disclosure of the input device permanently affixed thereto . . . provided with a unique identifier. However, *Ogasawara* discloses, in col. 10 lines 43-46, that “each message coming from a wireless telephone 18 is associated with the customer’s telephone number, customer ID or some other unique identifier”. Applicant attempts to dilute this statement by stating instead that the wireless phone number “is associated with some type of customer phone number . . .” In *Ogasawara*, col. 10 line 21 it is stated that the customer’s phone number which must be that which is associated with the phone referred to in the immediately preceding part of the



sentence is used. Thus regardless of what the phone number is being used for by the system in *Ogasawara*, the phone number still answers the limitation of a unique ID tied to the device 18. The allegation that *Ogasawara* fails to associate the input device and the scanned item is irrelevant because the unique ID tied to the phone 18, which phone is independent of any location, is all that the examiner is relying on for in the *Ogasawara* reference in reference to claim 22. The motivation for combining *Ogasawara* and *Hudetz et al.* is set forth in the office action and is considered proper.

28. Applicant believes that this is clearly incorrect. The Examiner is basically stating that Applicant has made an attempt to dilute the Examiner's statement that *Ogasawara* disclosed that "each message coming from a wireless telephone 18 is associated with the customer's telephone number, customer ID or some other unique identifier" by stating instead that the wireless phone number "is associated with some type of customer phone number . . ." By focusing merely on the fact that there is a limitation of a unique ID tied to the device, the Examiner has done nothing more than identify a particular element in the prior art. *Kahn* stated that "however, a mere identification in the prior art of each element is insufficient to defeat the patentability of the combined subject matter as a whole." (*Kahn at 986*) Rather than merely concentrate on this element, the Examiner is required to articulate the basis on which the Examiner concludes that it would have been obvious to make the claimed invention, i.e., one of the reasons the Examiner is required to explain the reasons why one of ordinary skill in the art would have been motivated to select the references and to combine them in order to render the claimed invention obvious. There is no such teaching from the mere fact that the Examiner indicates a unique ID exists. Thus, Applicants believe that the Examiner has not met a *prima facie* case by stating that "regardless of what the phone number is being used for by the system in *Ogasawara*, the phone number still answers the limitation of a unique ID tied to the device 18." Further, the Examiner's statement that the fact that *Ogasawara* fails to associate the input device in the scanned item is irrelevant due primarily to the fact that the unique ID is tied to the phone 18 is incorrect, as this is certainly relevant to support an obviousness rejection. All the Examiner is relying on is that particular aspect and that is insufficient to show there is any motivation, suggestion or teaching that would lead one skilled in the art at the time of the invention to

combine the teachings of *Ogasawara* with *Hudetz* to allow one with the teaching of *Hudetz* in front of them to incorporate a scanner with a unique ID therein.

29. Applicants therefore believe that the Examiner has failed to show a *prima facie* case for the combination of *Ogasawara* and *Hudetz* that would lead one skilled in the art to utilize a scanner or an input device that has a unique ID permanently affixed thereto that is independent of any location.

30. The Examiner has further stated that *Hudetz* fails to disclose the unique ID as being associated with the message packet. The Examiner is relying upon the *Simonoff et al.* reference for such disclosure, citing the disclosure at column 11, lines 13-68 therein. That disclosure is set forth as follows:

After the Universal Client device on the client host 300 establishes the Transmission Control Protocol/Internet Protocol (TCP/IP) socket connection, the host server 100 immediately responds, in an exemplary case, to the Universal Client device with the characters "(Client:you.sub.-- are id.sub.-- number)," where id.sub.-- number is a unique 8-digit integer, during step 4. It will be appreciated that a computer-generated server host socket hashcode value is generally recommended for id.sub.-- number, since it is guaranteed to be unique and since it identifies the logical socket connection between the server host 100 and the client host 300 running the Universal Client device. It should be mentioned that the server host 100 advantageously can selectively send GUIScript to multiple client hosts 300a-300r, as shown in FIG. 2, by filtering the id.sub.-- number.

It should be mentioned at this point that any number of the multiple client hosts 300a-300r can be interactively connected to one another either by LAN 400 alone or through server 100 via LAN 400. Thus, client hosts 300a and 300b can be directly connected to one another so that the users can communicate with one another. FIGS. 7 and 8, which are discussed in greater detail below, illustrate an exemplary chat room which can be established between two or more users. It should also be mentioned that a single client host 300a advantageously can be connected to, for example, multiple application hosts 200a-200m so that the GUI displayed using the Universal Client device includes data

generated by several different application hosts 200a-200m. Of course, when referring to combat system applications, several client hosts 300a-300r preferably display the data generated by the application hosts 200a-200m, although each of the client hosts 300a-300r may display received information filtered through a unique GUI.

It will be appreciated that the purpose of the "Client:you.sub.-- are" message is to provide the Universal Client device with a unique identifier such that the server host 100 can distinguish which of the client hosts 300a-300r is sending GUIScript transmissions and positively identify which one of the client hosts 300a-300r will receive a GUIScript message from server host 100 via LAN 400. From this point on, any data sent from the Universal Client device will be appended with the client id.sub.-- number. Once the Universal Client device has the client id.sub.-- number, the next communication may be initiated by either the Universal Client device on the client host 100 or the server host 300. Each communication advantageously can be in the form of GUIScript, although the present invention is not limited to Universal Client device which are responsive to GUIScript messages. It should be mentioned that the Universal Client device advantageously can respond to other stimuli such as an ASCII character string and datagram.

The Universal Client device beneficially can be made interactive to a character string by employing, for example, a so-called "wait-for" command which causes the Universal Client device to respond in a predetermined way when a character string having a specified format is received. Thus,

31. This portion of the disclosure sets forth that the universal client device be disposed on the network and be placed in communication with the host server. The host server then assigns an ID number to the universal client device. The purpose of this is to be able to distinguish different universal client devices on a network. As noted herein above, this is no different than providing an Ethernet card which has a fixed ID disposed therein. However, this particular ID number does not, in Applicants' opinion, correspond to the unique ID that is disposed in permanent association with the input device. Certainly, when communicating between a universal client device and a server, one would utilize in a query to the server the ID associated with the transmitting device for the purpose of providing a source address. This is typical of any

type of communication over a network. There would be an origination address, some type of information and a data field associated therewith and a destination address. This is fairly standard protocol. However, associating the unique ID in a message packet, in accordance with the claim, is done such that it is in association with the scan code. There is nothing in *Simonoff* that would lead one skilled in the art to utilize the teaching of *Simonoff* to incorporate such a unique ID in the message packet. This unique ID is the ID of the scanning device and it is not the address of the destination device for the purpose of matching to connect to a location having an association with the combination of the scan code and the ID. As with Ethernet cards, the unique serial number on that Ethernet card is disposed within a network look-up table such that there is a recognition of what the address is, and this is an address and not an ID used for recognizing a source node. Thereafter, all that is necessary is to place the communication on the network device that can be recognized by a particular node. There is no purpose of the ID in the claim such that the unique ID would be utilized for such a purpose. Therefore, there is no reason or motivation for anyone faced with the problems set forth in *Hudetz* to utilize this unique ID for the purpose of providing a match in a database, i.e., the only purpose for the ID in *Simonoff* is to provide a particular node on a network for the purpose of generating a communication path. *Hudetz*, with TCP/IP communication, already has such a source address, so why is an additional one needed? There is no such source address use of the ID in the claim and, therefore, Applicants believe that there is no motivation, suggestion or teaching in *Simonoff* that would lead one skilled in the art at the time the invention was made to utilize this particular source address ID for the purpose of a matching operation utilizing a totally separate ID. These IDs are for diametrically opposite purposes and, therefore, Applicants believe that the combination of *Simonoff* and *Hudetz* would be improper.

32. The Examiner has provided no reference that would illustrate that there is any second location on a network that has a predetermined association with a combination of a unique value and a unique input device ID, wherein the association between the unique value and the unique input device ID associates the second location with both the unique device ID and unique value. It is this association that allows the connection of the first location to the second location. All that the Examiner has done is provide *Ogasawara* for the purpose of providing a unique input

device ID in association with the input device and *Simonoff* for providing the combination of an ID and a message. There is nothing in the disclosure of *Hudetz*, *Ogasawara* and *Simonoff*, taken singularly or in combination, that in any way shows a second location that has an association with the combination of those two values. If there was no such association, there is no reason to transmit the combination of the input device ID and the scan code in the message packet. As such, even if the combination of *Ogasawara*, *Hudetz* and *Simonoff* were proper, which Applicants believe they are not, that combination fails to disclose the whole invention as set forth in the claim.

33. In view of the above, Applicants respectfully request withdrawal of the 35 U.S.C. § 103 rejection with respect to claims 22-27.

34. Applicants have now made an earnest attempt in order to place this case in condition for allowance. For the reasons stated above, Applicants respectfully request full allowance of the claims as amended. Please charge any additional fees or deficiencies in fees or credit any overpayment to Deposit Account No. 20-0780/PHLY-24,913 of HOWISON & ARNOTT, L.L.P.

Respectfully submitted,  
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RELATED PROCEEDINGS APPENDIX

None.